The Contribution of Psychological Resources in the Creation of Employee Psychological Safety

Submitted for the degree of Doctor of Philosophy

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March 2020

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Abstract

Research suggests that in order to be creative and weather organisational changes, employees need to feel psychologically safe (Edmondson, 1999). And yet today, many organisations operate in such a way as to confound this: constant change, matrix structures, poor leadership and job insecurity undermine mechanisms that can create Psychological Safety.

Psychological Safety has been considered a group construct (Edmondson, 1999). This study adds to the field by investigating the role of Psychological Safety at an individual level, hypothesising that the greater the individual's psychological resources, the greater their levels of Psychological Safety.

The study measured psychological resources using three models: Kahn's (1990) Psychological Dimensions, Good's (2009) Cognitive Flexibility and the Psychological Capital (PsyCap) model (Luthans & Church, 2002). Extant research suggests that resilience is a result of the leveraging of resources, therefore the role of resilience in the Psychological Capital model was hypothesised to sit outside of the Psychological Capital model.

Focus groups, a student pilot study (N=40) and an employee study (N=160) supported the hypothesis that resilience sits outside the Psychological Capital model. Results showed that attitudes of Optimism and Hope predicted Psychological Safety and Self-Efficacy, Hope and Attentional Control predicted Resilience. Underlying each of these were emotional resources, cognitive resources, openness and self-consciousness. The greater the level of psychological resources, the more positive the attitude and the greater the Psychological Safety and Resilience scores. A mixed methods longitudinal study demonstrated skills that enable Hope, Optimism and Self-Efficacy as well as openness could be developed within a half day workshop.

This research recognises that employees have a role to play in their own Psychological Safety and resilience. Implications of the research and recommendations based on these findings are then suggested for organisations and employees. Students were found to have less psychological resources than employees though this requires further research.

Keywords: Psychological Safety, resilience, psychological resources, self-efficacy, hope, optimism, cognitive flexibility.

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Declaration of Original Authorship

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

Samantha A Mather

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In Memoriam

Ken Mather

d. September 2019

Dad, you were so supportive of my PhD. That you never got to see me complete it will be my eternal regret.

I hope this would make you proud.

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Acknowledgements

My heartfelt thanks go to my two supervisors, each of whom added their own unique gifts to the process.

Professor Patricia Riddell, thank you for your guidance, wisdom and statistical drawings. Your expertise and ability to challenge my thinking has led to a depth of learning I never could have imagined.

Dr Dorota Bourne (and Clara), thank you for the alternative viewpoints: for keeping it real! Your ability to identify what's important (in writing and life!) has helped me keep focus.

To you both, thank you for the opportunities and the support during the tough times. And of course, the laughs – it was fun and I will miss this!

My sister Karen. Studying at the same time, feeling each other's pain has brought us even closer together, so no matter the outcome of this thesis, it has been worthwhile.

Finally, to my friends and family who have supported me through this, at times even financially – thank you, I know I owe you more than a few drinks.

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List of Abbreviations

ACS……..	Attentional Control Scale
AHS……..	Adult Hope Scale
AUT……	Alternative Uses Test
CFA……..	Confirmatory Factor Analysis
CFLEX……..	Cognitive Flexibility: Combines the two cognitive flexibility measures: Openness (LMS) and Attentional Control (ACS)
Cog_ Resources……..	Cognitive Resources
CSE……..	Core Self Evaluations
EFA……..	Exploratory Factor Analysis
Emo_ Resources……..	Emotional Resources
FCA……..	Fluid Cognitive Ability
HOSE……..	Construct of Hope, Optimism and Self-Efficacy
LMS……..	Langer Mindfulness Scale
LOT……..	Life Orientation Test
PCQ……..	Psychological Capital Questionnaire
POB……..	Positive Organisational Behaviour
PS……..	Psychological Safety
PsyCap……..	Psychological Capital
RPM……..	Ravens Advanced Progressive Matrices
VUCA……..	Volatile, Uncertain, Complex and Ambiguous.

1. Background and Rationale

1.1 Introduction

Today's fast moving and competitive environment in which organisations operate has been termed VUCA: an American military term referring to Volatile, Uncertain, Complex and Ambiguous situations. In response, to remain competitive, organisations have changed the way in which they operate. The need to remain agile and responsive to changing and dynamic markets had led to flexible, project based organisational structures (Popova, Shynkarenko, Kryvoruchko, & Zéman, 2018), remote working and more flexible employment contracts (CIPD, 2019c). This can create an increased level of uncertainty for employees (CIPD, 2013; Li, Liang & Farh, 2018). Simultaneously, demands on employees have risen; demands on their time, their interpersonal skills, their cognitive skills, their flexibility and ultimately their mental health (CIPD, 2013, 2019b; Quelch, & Knoop, 2018). Such demands can deplete employee's psychological resources to such an extent it can result in emotional exhaustion (CIPD, 2019b; Sijbom, Lang, & Anseel, 2019; Vammen et al., 2019).

In conditions of "complexity and uncertainty" feeling psychologically safe is especially important (Edmondson et al., 2016 p.80) as it enables individuals to put their energies into problem prevention and solution creation, rather than into self-preservation (Schien, 1993). Psychological Safety has been associated with the ability to be creative and innovative (Gong et al., 2012; Kark & Carmeli, 2009), increased engagement at work (Kahn, 1990), performance (Carmeli, Tishler & Edmondson, 2012; Schaubrook, Lam & Peng, 2011) and importantly in the VUCA environment, the ability to establish "new routines" (Edmondson & Lei, 2014 p.34).

Psychological Safety has been considered a "group level phenomenon" (Edmondson & Lei, 2014 p.30) and extant research has been in the context of teams in non-VUCA organisations. However, teams in today's organisations are more geographically dispersed, remote and often with temporary membership, (Cartwright, 2003; Edmondson & Harvey, 2017; Faraj & Yan, 2009; Gibson & Gibbs, 2006; Heerwagen, Kelly & Kampschroer, 2016; Mohrman, 1999). Therefore, the central research question is whether we can continue to rely on teams or organisations to provide us with mechanisms that create Psychological Safety? Should we be looking to intrinsic personal resources for our Psychological Safety? If so, which personal resources are key to Psychological Safety? The following chapter describes the rationale and context for this research, identifying the gap that it intends to address and the benefits of doing so. Finally it will provide an overview of the subsequent dissertation structure.

1.2 The Environment Has Changed

Driven by globalisation, economic and political instability, social and cultural shifts and rapid technological change (Asongu, 2015; Baard, Rench & Kozlowski, 2014; Griffin & Hesketh, 2003; Haskel & Martin, 2001; Ployhart & Bliese, 2006; Truce, 2017) todays VUCA environment is synonymous with new and unexpected challenges. Due to the many interconnected, sometimes global, variables both within and outside of organisations the relationship between cause and effect may not be known. Consequently organisations are dealing with "unknown unknowns" (Bennett & Lemoine, 2014b, p.27) resulting in ill-defined problems and novel situations (Chan, 2000). These are described as problems that are difficult to define or even to know which information is relevant to a potential solution, of which there may be many (Mumford et al., 2000). Leveraging past experience or historical data to address these no longer provides the competitive edge needed (Cousins, 2018; De Meuse, 2010). In such dynamic, fast moving and uncertain environments, to remain competitive, organisations need to be able to adapt quickly and innovatively to meet environmental demands (Cartwright, 2003; Griffin & Hesketh, 2003; Pérez-Bustamante, 1999; Schuler, Jackson & Tarique, 2011).

The agility needed to meet these demands, requires changing organisational norms, processes, operational models, structures and technology (Cartwright 2003; Chan, 2000). Indeed, change and its increasing pace, has become the norm in organisations (Beechler & Woodward, 2009; Weick & Quinn, 1999; Worrall & Cooper, 2012). The consequence of such rapid and continuous change is that organisations are less predictable and stable (Beechler et al., 2009; McArthur, 2016) resulting in increased ambiguity and uncertainty (McArthur, 2016).

As organisations experience pressure to change, so do the employees within them (Ployhart & Bliese, 2006). A new breed of employee is needed. One who is technologically, culturally, globally and change literate with the skills and resources to be able to cope in todays "increasingly delayered, disaggregated" organisations (Chambers et al., 1998 p.47). To succeed in this dynamic and uncertain business environment organisations demand a high level of employee adaptability (Beechler & Woodward, 2009; Chan, 2000; Griffin & Hesketh, 2003; Ployhart & Bliese, 2006; Wanberg & Banas 2000). Changes in organisational structure, technology and job assignments require workers to be flexible in adopting new roles, modifying existing work behaviours, acquiring new skills, moving jobs or even careers with increasing frequency (Chan, 2000; Ployhart & Bliese, 2006; Wanberg & Kammeyer-Mueller, 2000). The pace of technological change means that existing knowledge soon becomes obsolete (Shaffer, 2011). Employees are expected not only to gain the skills and knowledge needed but to be able to apply them in innovative and creative ways in order to create competitive

advantage (Hill & Davis, 2017; Kark & Carmeli, 2009; Kroon, van Woerkom & Menting, 2017; Nelson & McCann, 2010; Sharkie, 2005).

This has resulted in a demand for more highly educated workers, particularly across OECD (Organisation for Economic Co-operation and Development) countries (Michaels, Natraj & Van Reenen, 2014). In the UK the CIPD predicts knowledge intensive industries will increase the demand for high-skilled labour, relying less on low- and middle-skilled employees (CIPD, 2015). The dichotomy is that as the demand for such talents increases, globally there is a supply shortage (Beechler & Woodward, 2009; Chambers et al., 1998; Jamrog 2004; Nelson et al., 2010; Schuler, Jackson & Tarique, 2011). McKinsey and Company's phrase "The War on Talent" is as relevant today as it was in 1998. An aging population (Cracknell, 2010) is reducing the talent pool from which organisations can draw. In 2011 the McKinsey Quarterly Review (Manyika et al., 2011) estimated that by the end of 2020 the US will have a shortage of up to 1.5 million workers with degrees or higher that will be needed to fill the skills profiles of future jobs. In the UK, 30% of the workforce is over the age of 50 (CIPD, 2015), and while one-in-six of the UK population is currently aged 65 and over, by 2050 this figure is estimated to be one in-four, posing a risk of critical knowledge loss in the next 30 years. So the competition is high for the best talent who, if dissatisfied, can confidently take their skill and knowledge and "walk out the door at any time" (Mohrman, Finegold, & Klein, 2002 p.140) – possibly straight into a competitors organisation.

Therefore, not only do organisations need to attract talent into roles that "demands creativity, research, and the abilities of the mind" (Amar & Hlupic, 2016 p.240), they need to create environments that enable these talents to generate outputs that are transformative and innovative (Baer & Frieze, 2003; Greenspan, 1997). Therefore, creating an environment that encourages innovation and creativity is becoming a critical organization competency (Nadler & Tushman, 1999; Nelson & McCann, 2010; Schuler, Jackson & Tarique, 2011). Such an environment is one in which any potential personal risks that may be associated with innovation-generating behaviour such as learning from mistakes, voicing new ideas or challenging the status quo are minimal (Baer & Frese, 2003; Claxton, 2001; Edmondson, 1999; Edmondson & Mogelof, 2006; Hodgkinson et al., 2009; West, 2000). Free from the fear of "interpersonal risk taking" (Edmondson, 1999 p.350) employees are able to channel their cognitive and emotional resources into their role and workplace (May, Gilson & Harter, 2004; Wanless, 2016a, 2016b). It is in this environment that employees feel Psychologically Safe (Baer et al., 2003; Edmondson, 1999; Kahn, 1990; May et al., 2004).

1.3 Psychological Safety

Psychological Safety has been defined as feeling "able to show and employ one's self without fear of negative consequences to self-image, status or career" (Kahn, 1990, p708). Extant research has identified the organisational mechanisms that contribute to Psychological Safety. These include organisational structure (Bunderson & Boumgarden, 2010), work design (Hackman & Oldham, 1976), role clarity (Frazier, Fainshmidt, Klinger, Pezeshkan & Vracheva, 2017) and job enrichment (Maslach, Schaufeli & Leiter, 2001; May et al., 2004). Leadership styles have been shown to positively impact Psychological Safety (Edmondson, 1999; Kahn, 1990) such as transformational leadership (Detert & Burris, 2007), ethical leadership (Walumbwa & Schaubroeck, 2009), servant leadership (Schaubroeck, Lam & Peng, 2011), leader–member exchange (Coombe, 2010), trust in one's leader (Madjar & Ortiz-Walters, 2009) and the provision of a supportive work context (Frazier et al., 2017; Maslach et al., 2001). The interaction with peers has also been shown to contribute to Psychological Safety (Edmondson, 1999; Kahn, 1990) such as support from team members (Schepers et al., 2008), team caring (Bstieler & Hemmert, 2010), and trust in team members (Zhang et al., 2010). Indeed, current Psychological Safety definitions and measurements refer to the cognitive, motivational, and affective state of a team at certain point in time as a result of team interaction (Edmondson & Mogelof, 2006; Faraj & Yan, 2009; Marks, Mathieu & Zaccaro, 2001; Mayfield, Tombaugh & Lee, 2016),

And yet paradoxically, the consequences of the VUCA environment appears to confound these mechanisms (De Meuse, 2003; Mumford et al., 2000) as organisation's human resource strategies strive to stay lean and agile (Direnzo & Greenhaus, 2011). Traditional employment relationships are changing (Sharkie, 2005) resulting in a rise in the "gig-economy", zero hour contracts and temporary employment (De Witte, Pienaar & De Cuyper, 2016; Guest, 2017). Job descriptions and role clarity, the "bedrock" of workers stability (De Smet, Lund & Schaninger, 2016 p.3), are now replaced with blurred boundaries and fluid job assignments (Buhler, 2011; Cartwright, 2003; McArthur, 2016; Mohrman, 1999). The security of team membership may now be replaced by virtual and multiple team membership (Cartwright, 2003; Edmondson & Harvey, 2017; Faraj & Yan, 2009; Gibson & Gibbs, 2006; Heerwagen Kelly & Kampschroer, 2016) which can create conflicting priorities and/or communications (Mohrman, 1999). Organisational structures are becoming flatter (Ashkenas, 2012; Craig 2016; Heerwagen et al., 2016), norms, processes and operational models are all changing (Cartwright, 2003). And the change is constant (Bawany, 2016; Beechler et al., 2009; Cartwright, 2003; Greenspan, 1997; Heerwagen, Kelly & Kampschroer, 2016). The VUCA environment has led to a pattern of worsening work environments (Kallaith & Kallaith, 2012) with increased pressure (Mumford et al., 2000; Ployhart & Bliese, 2006) and uncertain goals or the means to achieve them

(Mumford et al., 2000). All of which has a moderating effect on Psychological Safety (Faraj & Yan, 2009).

Increasing insecurity at work (Chan 2000; Direnzo & Greenhaus 2011; De Witte et al., 2016) can result in an employee's cognitive and emotional resources being invested into self-protection mechanisms (Bradley et al., 2012; Christian, Garza & Slaughter, 2011; May, Gilson & Harter, 2004; Ruttan & Nordgren, 2016; Schien 1993) rather than innovation, creativity or problem solving. Increased stress levels can compromise an employee's ability to adapt, innovate and perform, as stress-induced hormones have a detrimental effect on the brain's pre-frontal cortex– the area central to "intelligent, goal-directed behaviour" (Miller, Freedman & Wallis 2002 p.1123) and needed to deal with complexity and adaptation (Arnsten, 1999 p.221). The workplace in which employees have the time and space to invest their psychological resources in innovation-generating behaviour seems further away than ever.

The rise of globalisation and technological advancement is not likely to slow down, at least not in this author's lifetime, so the need for organisations to remain lean and agile remains paramount to survival in the VUCA world. In addition, organisations need employees who are adaptable, flexible, smart thinking and innovative. The dichotomy seems to be that the former need seems to thwart the latter.

In continuing to look to organisations and teams to be the sole provider of Psychological Safety mechanisms, employees may be found wanting. Kahn's (1990) definition of Psychological Safety refers to being "*able* to show and employ oneself….." (p.705). However using extrinsic organisational mechanisms to create Psychological Safety will at best create an environment whereby the employee is *willing* to show and employ oneself. Even if the "perfect" organisational mechanisms or team were in place to create Psychological Safety, the reality is that Psychological Safety is a subjective concept that is determined by individual's beliefs or perceptions of their environment (Baer et al., 2003; Baltes, Zhdanova & Parker, 2009; Edmondson, 1999; Rousseau et al., 1998; Siebert, Wang & Courtright, 2011; Wanless 2016; Zinsser & Zinsser, 2016). Despite working in the same environment, employees may attach different meanings to events and interactions depending on their individual state and trait-like characteristics, past experiences and their available psychological resources (Wanless, 2016). The extent to which an employee is *able* to show and employ oneself may depend on more intrinsic psychological and emotional processes (Holtom, Mitchell & Lee, 2006; Stajkovic, 2006) than organisational mechanisms.

Kahn's (1990) Psychological Dimensions model identifies three dimensions needed for workplace engagement. The Meaningfulness and Safety dimensions of his model refer to the extrinsic

mechanisms for engagement such a meaningful work and relations with colleagues. However, to be able to fully employ oneself at work, the individual also needs "a sense of possessing the physical, emotional and psychological resources" (Kahn, 1990 p.714). This he refers to as the "Availability Dimension" which includes emotional resources, insecurity (cognitive resources) and outside (work) life.

Resource theories suggest that individuals navigate their world by adapting and leveraging their intrinsic and extrinsic resources to maintain a sense of personal equilibrium and to deal with life's challenges (Carver, 1998; Masten et al., 1999; McEwen, 2016; Richardson, 2002; Tusaie & Dyer, 2004). Consistent with resource theories, Luthans, Avey, Avolio and Peterson define personal resources as "measurable characteristics that predict positive outcomes and adaptation to adverse circumstances" (2010, p.47). Obtaining, retaining, and deploying personal resources protects individuals from situations that might otherwise adversely affect psychological or physical wellbeing (King et al., 1999). Those rich in personal resources are able deploy these to cope and adapt to both work and life challenges (Egeland, Carlson & Stroufe, 1993; Masten, Best & Garmezy, 1990; Taylor, 1983; Van Den Heuvel et al., 2010).

This suggests that in addition to extrinsic mechanisms, organisations need to ensure that employees have the personal resources without which "positive psychological outcomes" may be undermined (Hobfoll, 2002 p.311) which can lead to stress and depression (Kobasa, 1979; Hobfoll, 1989; Holahan et al., 1999). Personal resources, such as those identified by Kahn include extrinsic non-work related resources such social support and family. However, the personal resources to which this study refers are the psychological resources an individual has available for Psychological Safety.

1.4 This Research

This research aims to address Psychological Safety from the perspective of the individual. To be able to leverage psychological resources to maintain ones Psychological Safety may help contribute to employee performance and resilience in VUCA environments. Given the increasing awareness in employee wellbeing and mental health in the workplace, this research could not be timelier. In understanding whether psychological resources can create the Psychological Safety necessary for both organisations in terms of innovation, creativity and performance as well as employee wellbeing, provides a new perspective on Psychological Safety as an individual as well as a group construct. This research does not aim to exonerate organisations from their responsibilities in providing a Psychological Safe environment. Indeed, organisations need to develop an environment that will

create the “willingness” to employ the self at work. Perhaps it is the intrinsic psychological resources that determine the *ability* to do so.

As this thesis will discuss, there are a plethora of proposed psychological resources and associated models in the literature. As the literature review in this study discusses, the focus for this research is on three psychological resource models.

The first is the Psychological Capital model (Luthans & Church, 2002) created as part of the Positive Organisational Behaviour movement (Seligman & Csikszentmihalyi, 2000) identifies four psychological resources needed for workplace performance: Hope, Optimism, Self-efficacy and Resilience. The research will evaluate this model, arguing that resilience is better positioned as an output of Hope, Optimism and Self-efficacy rather than input to the Psychological Capital model.

Hypothesised to replace resilience in the Psychological Capital model is Cognitive Flexibility. Cognitive Flexibility is the ability to “shift avenues of thought and action in order to perceive, process and respond to situations in different ways” (Eslinger & Grattan, 1993, p.17). This enables an awareness of new environments, the suppression of habitual or automatic responses and the creation of new thinking. Research suggests that those with cognitive flexibility are able to deal with complexity and ambiguity, finding novel solutions to the new problems organisations face. This ability is also associated with resilience to stress (Genet & Siemer, 2011). The Cognitive Flexibility model developed by Good (2009) identifies the cognitive resources needed for this: openness/mindfulness and attentional control. This study evaluates these as a key psychological resources for inclusion in the Psychological Capital Model.

The final resource model is the Availability dimension of Kahn’s model. This includes cognitive and emotional resources, self-consciousness and outside support.

In total, 10 psychological resources are studied initially in the context of Psychological Safety and eventually resilience.

The research methodology is mixed method triangulation, using both qualitative and quantitative methods. Focus groups provide the validation of the hypothesis that the individual has a role to play in the creation of Psychological Safety. This is followed by two quantitative studies (one student, one employee) using the existing measures of the psychological resources and well known tests of divergent thinking and attentional control. Analysis on this data includes Principal Component Analysis (PCA), confirmatory factor analysis (CFA) and regression analyses. Finally data from the focus groups and quantitative analysis is brought together in a longitudinal training study in which

participants were tested before and 4-6 weeks after training from which both quantitative and qualitative data is drawn.

The outputs of the methodology are discussed both generally and in terms of the implications for organisations and employees.

2. Literature Review

2.1 Psychological Safety

Psychological Safety is defined as being "able to show and employ one's self without fear of negative consequences to self-image, status or career" (Kahn, 1990 p.708). Psychological Safety is thought to be a necessary cognitive state for learning and adapting (Edmondson, 1999; Edmondson & Lei, 2014; Frazier et al., 2017) as when feeling safe from "interpersonal risk" (Edmondson, 1999 p.354) it is considered that employees are more likely to challenge, make mistakes or even fail without incurring negative consequences (Schien & Bennis, 1965). As such, Psychological Safety has been widely attributed to improved employee engagement (Kahn, 1990; May, Gilson & Harter, 2004), vitality (Dutton & Heaphy, 2003; Kark & Carmeli, 2009) and employee voice (Ashford, Rothbard, Piderit & Dutton, 1998; Detert & Burris 2007). Psychological Safety has also been associated with improved performance at employee, team and organisational levels. Employees who experience Psychological Safety have been shown to feel less anxious (Hackman & Oldham, 1976) and demonstrate increased creativity (Kark & Carmeli 2009; Bradley et al., 2012; Gong et al., 2012), decision making (Bradley et al., 2012) and proactivity (Gong et al., 2012). Team collaboration (Edmondson, 1999, 2014), information exchange (Gong et al., 2012, Frazier et al., 2017) and conflict mitigation (Bradley et al., 2012; Carmeli, Tishler & Edmondson, 2012; Schaubrook, Lam & Peng, 2011; Tucker, Nembhard & Edmondson, 2007) have also been shown to improve in environments where Psychological Safety is perceived as high. At an organisational level a psychologically safe environment has been shown to be related to quality improvement (Nembhard & Edmondson, 2006) and increased acceptance of change (Schien & Bennis, 1965; Schien 1993). To survive today's uncertain and complex environments, such attributes are considered particularly relevant (Edmondson, 1999; Hall, Dollard & Coward, 2010; Edmondson, Higgins, Singer & Weiner, 2016). Research into the sources of Psychological Safety has primarily focused on organisational resources. Zinsser and Zinsser (2016) found in their qualitative research with staff of two pre-schools, organisational policies and practises can generate different degrees of psychological safety. Hackman and Oldham's Job Characteristics Theory (1976) proposes that the design of work can impact Psychological Safety, specifically the level of autonomy, role clarity and interdependence. Relationships with leaders provide employees with cues as to organisational norms (Kahn, 1990). Consequently, research into the impact of leadership styles on Psychological Safety have included transformational leadership (Detert & Burris, 2007), ethical leadership (Walumbwa & Schaubroeck, 2009), servant leadership (e.g., Schaubroeck, Lam, & Peng, 2011), leader–member exchange (Coombe, 2010), leadership trust (e.g. Madjar & Ortiz-

Walters, 2009). However, it is at the team level where most Psychological Safety research has focused, in particularly relationships between team members (Bstieler & Hemmert, 2010; Bunderson et al., 2010; Edmondson, 1999; Schepers et al., 2008; Zhang et al., 2010). Indeed, Psychological Safety has been described as a group-level phenomenon (Bradley et al., 2012; Edmondson & Lei 2014; Idris et al., 2012; Parker et al., 2003), described by Edmondson as "a shared belief…that the team is safe for interpersonal risk taking" (Edmondson, 1999 p.350). Furthermore, despite significant changes in organisation and team environments over the 20 years since the Edmondson's Psychological Safety questionnaire was devised, it remains the standard for the measurement of Psychological Safety. (See Appendix A for summary of studies).

However, in VUCA organisations, teams may not only be remote and virtual but temporary with fluid membership (Gibson & Gibbs, 2006; Faraj & Yan, 2009; Heerwagen et al., 2016; Edmondson, 2017). As a member of multiple teams, often with multiple reporting lines (Mohrman, 1999), employees may struggle to answer questions referring to a single team (see Edmondsons Psychological Safety Questionnaire: table 2.1). One of the fastest growing flexible working trends is that of working from home; between 2011 and 2018 the number of employees working from home had increased by 51% (CIPD, 2019c, p.14). Consequently, the increase in virtual teams has resulted in interactions between both colleagues and bosses being virtual and more perfunctory thanks to email, IM and texts resulting in less of a social connection (Mohrman, 1999; Cartwright, 2003). The traditional construct of a "team" has changed since the development of Edmondson's questionnaire.

Psychological Safety Questionnaire (Edmondson, 1999)

Scale: Strongly Disagree /Disagree/Neutral/ Agree /Strongly Agree

1. When someone makes a mistake in this team, it is often held against him or her (R).
2. In this team, it is easy to discuss difficult issues and problems.
3. In this team, people are sometimes rejected for being different (R).
4. It is completely safe to take a risk on this team.
5. It is difficult to ask other members of this team for help (R).
6. Members of this team value and respect each other's' contributions.

Table 2.1 Edmondson's Team Psychological Safety Questions (1990)

Furthermore Edmondson's' questionnaire has been challenged around its approach in averaging scores across multiple team members to create a single score for team Psychological Safety which becomes sensitive to team size (Schepers et al., 2008). If Psychological Safety is the "extent to which one *believes* that another will give you the benefit of the doubt" (Edmondson, 1990) and an

individual's *belief* about how others will respond (Carmeli & Gittell, 2009) [author italics], it is an individual's perception that determines their Psychological Safety (Carmeli & Gittell 2009; Frazier et al., 2017; Kahn, 1990; Schein, 1993; Schein & Bennis, 1965). Although a team may share the same mechanisms to create Psychological Safety, research into cognitive schemas, suggest that each individual has their own program for decoding and interpreting external information in ways that are meaningful for them (Roussin, 2008; Walsh, 1995). Within the same team, members may have different levels of Psychological Safety. This suggests that as well as being a team construct, Psychological Safety is also an individual construct.

2.1.2 Psychological Safety at the Individual Level

There is recognition that employee perceptions (Jones & James 1979; Schuler, 1975), emotional reactions (Lodahl, 1964) and "psychological states" (Hackman & Oldman, 1976, p.250) can impact employee performance. An extensive study by Jones and James (1979) involved measuring the characteristics of 4315 men from the US Navy. Based on previous research of psychologically meaningful measures of the work environment, 35 a priori composites were measured. These are shown grouped into four categories: Job or Role, Leadership, Workgroup and Subsystem/ Organisation (see table 2.2).

Job or Role	**Leadership**	**Subsystem and Organisation**
1. Role Ambiguity	12. Support	24. Openness of expression
2. Role Conflict	13. Goal Emphasis	25. Organisation Communication (DOWN)
3. Job Autonomy	14. Work Facilitation	26. Interdepartmental co-operation
4. Job variety	15. Interaction Facilitation	27. Conflict of organisational goals and objectives
5. Job Importance	16. Planning and Co-Ordination	28. Ambiguity of organisational structure
6. Job Feedback	17. Upward Interaction	29. Consistent applications of organisational policies
7. Job Challenge	18. Confidence and Trust (UP)	30. Organisational esprit de corp
8. Job Pressure	19. Confidence and Trust (DOWN)	31. Professional esprit de corp
9. Efficiency of Job Design	**Workgroup**	32. Planning and Effectiveness
10. Job Standards	20. Co-operation	33. Fairness and objectiveness of the reward process
11. Opportunity for dealing with others	21. Friendliness & Warmth	34. Opportunities for growth and advancement
	22. Reputation for Effectiveness	35. Awareness of employee needs and problems
	23. Workgroup esprit de corps	

Table 2.2 Climate related variables arranged into four categories (Jones & James, 1979, pp212-213)

A principal components analysis of the 35 a priori composites using varimax rotation led to a 5 factor solution. The resulting dimensions were labelled: 1) Conflict and Ambiguity, 2) Job challenge, importance & variety 3) Leader facilitation and support, 4) Workgroup co-operation, Friendship and Warmth 5) Professional and Organisational esprit de corp (Jones & James, 1979, pp.218-219). A comparison of these five dimensions with data from other samples: 398 firemen and 504 exempt employees of a private health care program (52% were women), confirmed these findings. This supported research both prior to and since the study on the elements of work on which perceptions of climate are based, namely: task and role characteristics (Bray & Brawley, 2002; Hackman & Oldham, 1976; Lawler & Hall, 1970), leadership (Hu et al., 2018; Rao-Nicholson et al., 2016; Vroom & Mann, 1960), the team or workgroup (Brayfield & Crockett, 1955; Edmondson, 1999) and organisational operations (Burke & Litwin, 1992; Mann & Williams, 1962; Porter 1963). Thus there appears to be agreement as to what employees base their perceptions of climate on. However, all of these are extrinsic organisational mechanisms.

Two measures of individual intrinsic mechanisms used by Jones and James (need for acceptance/approval and self-confidence/ability) were used in a correlation analysis with the five dimensions. This showed that Ego needs correlated positively with Job Challenge, Importance and Variety and Professional esprit De corps. Self-esteem/confidence correlated with Job Challenge, importance and variety and Workgroup co-operation, friendship and warmth. No further analysis was reported therefore causal relationships between these variables are unknown. However, Jones and James recognised the role of the employee as both “perceiver and cognitive processor” (1979, p.20) of the psychological climate.

Psychological Safety has been recognised as an “intrapsychic” state (Edmondson & Mogelof, 2006 p.112); the individual has a role to play in the creation of their Psychological Safety, (Schein & Bennis, 1965; Edmondson, 1999, 2006; Kahn, 1990; Schein, 1993; Carmeli & Gittell, 2009; Frazier et al., 2017). Edmondson herself has called for more research into the impact of dispositional factors on psychological safety (Edmondson et al., 2016). Using the Costa & McCrae (1992) NEO Personality Inventory, Edmondson & Mogelof (2006) researched the relationship of personality with Psychological Safety. Twenty-six project teams (N=228) involved in innovative work were measured daily on the NEO Personality Inventory and at the beginning, mid-point and end of their projects for Psychological Safety. No significant differences in means for Psychological Safety were found between t1, t2 or t3. Extraversion was shown not to be a predictor of Psychological Safety. At the mid and end-points of the study, Openness positively predicted Psychological Safety and Neuroticism negatively predicted Psychological Safety (see table 2.3).

Although the greatest correlation with Psychological Safety in this study was Team Interaction (t1=r.55 p<.01; t2, r=.44, p<.01) these results might suggest that the personality elements of Openness and Neuroticism may influence the level of Psychological Safety. However, the measure of Psychological Safety used in this study was the "Encouragement" items from the KEYS survey tool, designed to assess organisational climate for creativity (Amabile et al., 1996). As discussed above, most Psychological Safety studies use Edmondson's' questionnaire. Therefore the results in this study should be treated with caution as to whether the same construct is being measured. Furthermore, the teams were measured at the beginning, mid and end point of their projects. However, as the projects were between 6 weeks and 10 months long, measures were taken at different intervals. Teams also varied in size from 3 – 20 people. As measures were aggregated to create team level results, the variances in team size may impact results.

	Neuroticism	Openness	Extraversion
PS t1 (beginning)	-.17*	r =-.01	r = .10
PSt2 (mid-point)	r= -.25** *F*=12.85, p<.001	r= -.05 *F*=3.53, p<.06	r= .19*
PSt3 (end-point)	r=-.35 *F*=17.40, p<.001	r=.13 *F*=1.41, p<.25	r= .17*

*p<.05 **p<.01 (N=228)

Table 2.3 Results from Edmondson & Mogelof Longitudinal Study on Psychological Safety and NEO Personality Measures (2006)

To date, there has been little further research into the intrinsic mechanisms within the individual that contribute to Psychological Safety. Work by Kahn (1990) acknowledged the role of both organisational mechanisms and individual resources in creating the environment that "shape the processes of people presenting and absenting their selves" at work (Kahn, 1990 p.694). These he called the psychological dimensions of engagement (see table 2.4).

Kahn's (1990) studies were qualitative, beginning with studies of 16 counsellors at a summer camp, average age 25.5 years, 9 men and 7 women. The second study was with 16 employees of an architecture firm, average age 34.3 years, 10 men, and 6 women. Data collection was in the form of observation, document analysis and 40-90 minute in-depth interviews that were recorded. In particular, Kahn asked participants to recall situations where they had felt:"(1) attentive, absorbed, or involved in their work, (2) uninvolved, detached, or distracted from their work, (3) differences between how they responded to a work situation and how they would have responded if they had not been at work, and (4) no differences from non-work behaviour to how they reacted to a work-related situation" (1990, p.698).

Dimensions of Psychological Conditions

Dimensions	Meaningfulness	Safety	Availability
Definition	Sense of return on investments of self in role performances.	Sense of being able to show and employ self without fear of negative consequences to self-image, status, or career.	Sense of possessing the physical, emotional, and psychological resources necessary for investing self in role performances.
Experiential components	Feel worthwhile, valued, valuable; feel able to give to and receive from work and others in course of work.	Feel situations are trustworthy, secure, predictable, and clear in terms of behavioral consequences.	Feel capable of driving physical, intellectual, and emotional energies into role performance.
Types of influence	Work elements that create incentives or disincentives for investments of self.	Elements of social systems that create situations that are more or less predictable, consistent, and nonthreatening.	Individual distractions that are more or less preoccupying in role performance situations.
Influences	Tasks: Jobs involving more or less challenge, variety, creativity, autonomy, and clear delineation of procedures and goals. Roles: Formal positions that offer more or less attractive identities, through fit with a preferred self-image, and status and influence. Work interactions: Interpersonal interactions with more or less promotion of dignity, self-appreciation, sense of value, and the inclusion of personal as well as professional elements.	Interpersonal relationships: Ongoing relationships that offer more or less support, trust, openness, flexibility, and lack of threat. Group and intergroup dynamics: Informal, often unconscious roles that leave more or less room to safely express various parts of self; shaped by dynamics within and between groups in organizations. Management style and process: Leader behaviors that show more or less support, resilience, consistency, trust, and competence. Organizational norms: Shared system expectations about member behaviors and emotions that leave more or less room for investments of self during role performances.	Physical energies: Existing levels of physical resources available for investment into role performances. Emotional energies: Existing levels of emotional resources available for investment into role performances. Insecurity: Levels of confidence in own abilities and status, self-consciousness, and ambivalence about fit with social systems that leave more or less room for investments of self in role performances. Outside life: Issues in people's outside lives that leave them more or less available for investments of self during role performances.

Kahn, 1990

Table 2.4 Kahn's Dimensions of Psychological Conditions (1990, pp705)

In total, Kahn gathered 186 unique experiences. Analysis involved identifying moments of personal engagement and disengagement and categorising them. Although this study was small and exclusively from white, middle class participants, Kahn's identified three dimensions of engagement, each of which reflects extant research.

1. Meaningfulness whereby there is a "sense of return on investments of self in role performance" (1990, p.703). This reflected task and role characteristics as well as interactions at work that generated a sense of it being worthwhile. This dimension reflects the work of Hackman and Oldham (1974, 1976) whereby the design of the job is critical to motivation.

2. Safety, i.e. Psychological Safety. Hackman and Oldham recognised the importance of "psychological states" (1976, p.256) on work performance, however Kahn provides details as to how this can be achieved: through interpersonal relationships, group and inter-group dynamics, management style and organisational norms. Edmondson's (1990) work on Psychological Safety as a team construct reflects this.

3. Availability – Kahn identified that individual's need a "sense of possessing the physical, emotional and psychological resources" (1990 p.714) needed to be able to fully engage at

work. The demands on individuals both in and out of work impacted their physical energy, emotional energy, levels of insecurity (about themselves) and outside life. This recognises that an individual's intrinsic resources have a role to play in performance and in doing so reflects extant resource models.

Hackman and Oldman's (1976) resource model, the Job Demand-Resources (JD-R) model, focuses on the role of job-related resources such as participation, job security, rewards, feedback and supervisor support in mitigating the stress and reduced energy levels that the demands of a job can bring, such as work overload. They define resources as "aspects of the job" (Demerouti, Bakker, Nachreiner, Schaufeli, 2001a p.501). The provision of sufficient job-related resources has been found to be motivational (Hackman & Oldman, 1976) as through these employees achieve the psychological states of meaning, accountability and satisfaction through their performance.

Bakker, Demerouti and Euwema (2005), in their study to determine the resources that can prevent burnout, 1012 employees of a Dutch Education institution completed questionnaires on burnout, job demands and the job resources of autonomy, social support, relationship with supervisor and performance feedback. Those employees that reported having high job demands and low resources had the highest levels of fatigue and demoralization. Similarly, Demerouti et al. (2001b) found that the absence of job resources correlated with disengagement.

However, the JD-R model was developed using jobs that were carried out individually and did not address group working or any interpersonal or situational moderators. The job characteristics required to create positive psychological states when there is a team, or indeed multiple teams, involved in the execution of a task may be different. Furthermore, although Hackman and Oldman recognised a role for individual intrinsic resources, the model focuses on the provision of extrinsic resources to counteract job demands. Such resources are reflected in Kahn's Meaningfulness and Psychological Safety Dimensions.

And yet not all resources have equal value. As Hobfoll (1989, 2002) recognises, a resource is that which is "valued by the individual or that serve as a means for attainment" (1989 p.516). What one person values, another may not. For example job security has been found to be a more valuable resource to older employees than younger ones (Cheng & Chan, 2008). Merely deploying extrinsic resources is not necessarily sufficient to have the desired effect of engagement, performance or Psychological Safety. It is how individuals perceive and appraise these external resources that will determine their effects (Jones & James, 1979; Xanthopoulou et al., 2007).

This paper does not suggest that the external organisational mechanisms are not important in the creation of Psychological Safety. However, for employees to rely only on external Psychological Safety mechanisms places the responsibility of Psychological Safety solely on the organisation, potentially positioning the employee in a passive, and in today's climate, precarious position. Many of the traditional antecedents to Psychological Safety such as work design characteristics and group dynamics (Kahn, 1990; Frazier et al., 2017) have changed. Today's teams are more "permeable" (Faraj & Yan 2009 p.605), and virtual (Gibson & Gibbs, 2006) with blurred boundaries (Heerwagen et al., 2016). The ability to answer Edmondson's Team Psychological Safety questionnaire with one simple answer becomes almost impossible given that employees are now members of multiple and changing teams (Mohrman, Cohen & Mohrman, 1995; Faraj & Yan, 2009).

If Psychological Safety is a construct at organisational, group and the individual level (Kahn 1990; Baer & Frese, 2003; Hudson, 2004; Gong et al.,2012), the Meaningfulness and Safety dimensions of Kahn's model point to the organisational and group level extrinsic resources that create an environment in which an employee would be *willing* to show and employ self at work. Perhaps it is the Availability dimension that identifies the individuals own internal psychological resources that provide the cognitive capacity to perceive and appraise these external resources positively. To what extent is Psychological Safety determined by intrinsic psychological resources: perceptions, characteristics, filters and circumstances (Baer & Frese, 2003; Carmeli & Gittel, 2009). And if psychological resources are important, is the Availability dimension of Kahn's model able to determine whether an employee is not just willing but "*able* to show and employ self" (1990, p.708) fully at work?

2.1.3 Psychological Resources

The Availability dimension of Kahn's model refers to the "physical, emotional and psychological resources" (Kahn, 1990, p.705) needed to be *able* to fully engage in work. Psychological resources are contained within the self and are what "people draw upon to help them withstand threats posed by events and objects in their environment" (Pearlin & Schooler, 1978, p.5).

Spanning various industries such as healthcare, clinical psychology, social care, and education, resource models such as the Transactional Stress model (Lazarus & Folkman, 1987), the Conservation of Resources model (Hobfoll, 1989) and the Job Demand - Resources model (Bakker & Demerouti, 2007) all refer to the importance of personal resources in dealing with stressful situations in order to maintain mental wellbeing. Appendix B provides a summary of key resource theories.

Despite the sheer number of differing resource theories there is general agreement that personal resources enable individuals to cope with situations that are perceived as adverse, threatening or challenging (Luthans et al., 2010; Pearlin & Shooler, 1978; Van den Heuvel et al., 2010). Furthermore, there appears to be consensus that excessive demands deplete personal resources thereby reducing the ability to manage life's demands (Baumeister et al., 1998; Hobfoll, 2002; Holahan et al., 1999; Keinan et al., 1999; King et al., 1999; Norris & Kaniasty, 1996). However how excessive demands deplete resources is much debated.

One school of thought suggests that we have finite resources (Baumeister, Muraven & Tice, 2000; Muraven & Baumeister, 2000; Muraven, Shmueli & Burkley, 2006) therefore excessive demands on our resources will lead to their depletion, known as ego depletion (Baumeister et al., 1998; Hobfoll, 2002; Hobfoll et al., 2003; Holahan et al., 1999; Keinan et al., 1999; King et al., 1999; Norris & Kaniasty, 1996).

However, this strength model, is not without its challengers. Job, Dweck and Walton refer to this as a "limited resource theory" (2010, p.1687) demonstrating in 3 studies on college students (N=183) that those who had a "non-limited resource" mind-set displayed less evidence of ego-depletion. Students were measure on their belief about resources using six questions such as "After a strenuous mental activity your energy is depleted and you must rest to get it refuelled again" (limited-resource theory) and "Your mental stamina fuels itself; even after strenuous mental exertion you can continue doing more of it" (non- limited-resource theory) (2010, p.1687). Ego depletion was also measured using the Stroop Test, identifying all the 'e''s in a document and 8 challenging IQ questions respectively. Findings indicated that (self-control) willpower was able to moderate ego depletion. A subsequent longitudinal study with university students (N=41) to measure the ability to self-regulate during times of stress using three time points during a term: the first at the start of term in April, the second in May and the last in June during final exam week. Self-control or regulation has been used for experiments in this field as this requires effort thereby placing increased demands on psychological resources. However, this is an indirect measure of resource capacity (Hagger, 2010). Self-regulation was measured by consumption of unhealthy food, procrastination instead of studying and personal goal striving. Analyses revealed that a limited-resource theory mind-set at time 2 predicted worse self-regulation on all three measures at the stressful time point, time 3; consumption of unhealthy food, procrastination rather than studying and self-regulation with respect to personal goal striving. Together, these results suggest that ego-depletion may be a result of a belief about whether resources are finite or not. Of course, what the study does not reveal is whether the belief about whether you have limited resources depends on the amount of psychological resources you have at the time. Perhaps a limited-resource mind-set is a result of ego depletion in itself. Furthermore, it is

possible that those with a non-limited mind-set feel fatigue and experience ego-depletion, but either don't notice or react to it while those who have a limiting mind-set, heed the ego depletion and choose to preserve their energies (Francis & Job, 2018).

Research has also posited that the extent to which we can exercise self-control is not a product of the amount of psychological resources available but of how the brain allocates glucose (Beedie & Lane, 2012), in particular for cognitive processes that are effortful (Gailliot et al., 2007). In one research study, glucose levels were measured in 110 students before and after watching a video. In this study, half the participants were asked to focus their attention on a specific aspect of the video (attentional control group) and half were instructed to watch the video normally (control group). Blood glucose levels were significantly lower for the attentional control group after watching the video than before watching the video. For the control group, glucose levels were not statistically significantly different before and after the video viewing. Other experiments which measured whether cognitive efforts decrease glucose levels have had mixed results (Inzlicht, Schmeichel & McCrae, 2014; Kurzban, 2010; Molden et al., 2012) with some researchers concluding that ego-depletion is not energy dependant.

For example, Inzlicht, Schmeichel and McCrae (2014) argue that from an evolutionary perspective, being able to apply self-control to manage hard-wired responses such as fear, in order to eat, to find shelter, to procreate etc. is an advantage. Having a limit to this capacity therefore would threaten survival. They explain ego depletion in the context of motivation and attention. In this model, the apparent loss of energy after self-control tasks is the result of changes in motivational priorities. Muraven & Slessareva (2003) found that incentivising performance by adding a financial reward for performance resulted in greater self-control despite resources having "depleted" in a previous task. In one experiment students were asked to suppress their emotional responses whilst watching a funny video. They were then required to drink a bitter tasking beverage as a further test of their motivation. When students were well paid for this task, they drank more of the bitter tasting drink that the group who were not paid, and the same amount as those in a group which was well paid but had no depletion task. This study demonstrated that providing a motivator enabled those who were depleted to perform as well those who weren't. Inzlicht et al., (2014) consider depletion as indicating that motivation, emotion and attention are reduced for "have to" tasks and increased for "want to tasks". An example of this would be after physical activity, when motivation moves from exercise to rest. Fatigue they argue is less about low energy and rather a signal to change one's activities. Baumeister et al., (2016, 2018) challenge this, arguing that the motivation/attention theory rests on the assumption that it is beneficial to disengage from have-to activities in favour of want-to ones. This, they argue, would be counterproductive if not dangerous.

Despite the conflicting theories, a meta-analysis of 83 experiments with 198 tests of ego-depletion by Hagger (2010) found some commonalities across experiments. Specifically the analysis showed that the more complex the task, the more cognitive processes were required leading to greater ego-depletion (as measured by self-control). This suggests that, while self-control draws from a single, common psychological resource, task performance is also impacted by perceptions of fatigue, difficulty and effort required. Incentives can therefore reduce the impact of ego-depletion on self-control. Hagger (2010) argues that Baumeister et al.,'s (2000) Strength Model, Job et al.,'s (2010) Limited Resource Model and Inzlicht et al.,'s (2012) motivational model may be reconcilable, however until a more objective measure of ego-depletion is found, alternative hypotheses will continue to exist.

It is not within the scope of this thesis to conclude this debate, but rather to examine particular psychological resources in the context of Psychological Safety.

There are many suggestions as to which psychological resources are important in managing and engaging with the challenges of our environment. These include: personal hardiness (King et al., 1999; Kobasa, 1979), control (Cozzarelli, 1993; Judge et al., 2005; Kobasa, 1979; Maier & Seligman, 1976; Taylor, 1983), self-esteem (Cozzarelli, 1993; Rini et al., 1999; Rosenberg, 1965; Stajkovic, 2006; Taylor, 1983; Thoits, 1995), creativity and wisdom, (Luthans & Youssef, 2007c ; Seligman & Steen, 2005), humour, (Carver et al., 1993; Luthans & Youssef, 2007; Seligman & Steen, 2005), authenticity (Luthans, Youssef & Avolio, 2007b), EQ, (Luthans & Youssef 2007c; Seligman & Steen, 2000), optimism (Carver, Scheier & Segerstrom, 2010; Peterson 2000) and courage (Luthans & Youssef 2007c). This suggests that there are multiple resources available from which individuals can draw to help them cope with environmental challenges. However, research supporting the possible benefits of specific personal resources is not always consistent.

One challenge results from the difficulty in defining personal resources. For example, although social support has been cited as a personal resource (Cohen & Hoberman, 1983; Holahan et al., 1999; King et al., 1999; Norris & Kaniasty 1996; Sarason, Sarason & Shearin, 1986; Thoits, 1995) what constitutes social support is debated. In particular, social support has been differentiated by the perception that individuals have of the social support available versus the actual support they receive (Barrera, 1986; Cohen & Hoberman, 1983; Lakey & Bennett-Cassady, 1990). Indeed, Barrera (1986) argues that 'social support' is a complex process and therefore the researchers need to consider carefully which aspect of 'social support' they wish to measure.

A further challenge relates to how psychological resources should be measured. An example of this comes from research by Makikangas and Kinnunen's (2003) into the role of optimism in moderating

work stressors amongst 457 employed individuals in Finland. Using the six item LOT scale (Scheier, Carver & Bridges, 1994) they found a significant negative relationship between optimism and the work stressors of time pressures, lack of control and organisational climate was found. However, Xanthopoulou, Bakker, Demerouti & Shaufeli (2007) also used the LOT to measure optimism, combined with a range of other personal resources including self-efficacy, organisational based self-esteem and optimism found that these measures did not moderate the perceptions of job demands but did mediate between job resources and exhaustion or engagement.

The challenge in understanding personal resources is in the variety of resources that might be tested, their definitions, the difference in measurements and how data is analysed. It is also not clear whether there is overlap between some personal resources. For example, Smith et al. (1989) in their study with 156 undergraduate students, argued that optimism was "contaminated" with neuroticism (p.646). However, in a larger study of 4309 undergraduate students, Scheier, Carver & Bridges (1994) found that optimism accounted for a smaller variance than in the Smith et al. (1989) study.

There is however, some consensus in the literature over the main psychological resources needed to enable individuals to deal with life's stresses. These are Meaningfulness, Self-Efficacy/Mastery and a Positive Outlook. The research supporting these three resources is discussed below.

2.1.3.1 Meaningfulness

Meaningfulness or purpose (Baumeister & Vohs, 2002; Kobasa, 1979; Taylor, 1983) is considered a key resource in maintaining a sense of stability (Bauermeister & Vohs, 2002). A qualitative study by Taylor (1983) investigated how 78 women with breast cancer adjusted to this life-threatening event. One important factor was found to be their search for meaning: their need to understand why they developed cancer, or a way to attribute their cancer to specific causes. The hypothesised causes provided by the women were not correlated with adjustment. Nor did any specific attributional explanations contribute more to adjustment or acceptance than another. The cognitive processes involved in finding meaning were shown to aid adaptation and coping. As a comparison, Taylor interviewed the spouses of cancer suffers. This group were significantly less likely to provide causal attributions for the cancer although affected by their partner's cancer.

Meaning becomes a narrative that we construct, using our filters, cognitive schemas and past experiences (Singer, 2004). And herein lies the challenge in measuring meaningfulness; it is a subjective measure (CIPD, 2019b) and definitions vary.

Further attempts have been made to measure meaning in the context of the workplace. Kobasa (1979) studied 86 high stress/low illness executives and 75 high stress/high illness executives in order to understand the characteristics that create "hardiness". Those with high stress but low illness demonstrated a sense of meaningfulness (as opposed to nihilism) as measured by the Nihilism versus Meaningfulness scale in the Alienation Test (Maddi, Hoover & Kobasa, 1982). While this scale measures cognitive control, Kobasa equated this with "the ability to find meaning in stressful life events" (1979, p.5). Others have used a more job-related approach such as Hackman and Oldham's Job Diagnostic Survey (1974: see Appendix C), defines meaningfulness as task significance. The Minnesota Satisfaction Questionnaire used by James and James (1989) measures job satisfaction and job importance. In recent research into workplace trends, the CIPD define meaningful works as having "a sense of pride and achievement at a job well done' (CIPD, 2019b p.28). However, there are only a "handful of published measures of meaningful work" (Steger, Dik & Duffy, 2012). Even fewer exist in the context of Psychological Safety.

Brown and Leigh (1996), created their own measures of Psychological Safety and Meaningfulness in order to determine how these factors contributed to job involvement, effort and performance. In two studies of employees (N=147 and N= 161) across 3 companies, Psychological Safety was measured using 5 questions on Supportive Management, 3 questions on Clarity and 4 questions on Self Expression. For meaningfulness, 4 questions concerning contribution, 3 questions about recognition and 2 questions about job challenge were created.

Analysis performed at individual variable levels rather than at Psychological Safety and Meaningful level demonstrated that all variables were correlated (see table 2.5 for correlations). A confirmatory factor analysis was used to model the contribution of each of these variables to the higher order factor of Psychological Climate. The model indicated that each Psychological Safety and Meaningfulness dimension had a statistically significant path to Psychological Climate (see

		MEANINGFULNESS		
		Contribution	Recognition	Challenge
PSYCHOLOGICAL SAFETY	Management Support	.37*** / .29**	.59*** / .43***	.27** / .18
	Clarity	.36*** / .28**	.44*** / .42***	.35*** / .22*
	Self-Expression	.52*** / .49***	.51*** / .65***	.23* / .27**
		KEY: * p<.05 **p<.01 ***p<.001		Sample 1 / Sample 2

Table 2.5 Correlation between Meaningfulness and Psychological Safety (Brown & Leigh, 1996)

figure 2.1). Although this work began to operationalise Kahn's theoretical model, it provided little clarity as to the relationship between Psychological Safety and Meaningfulness.

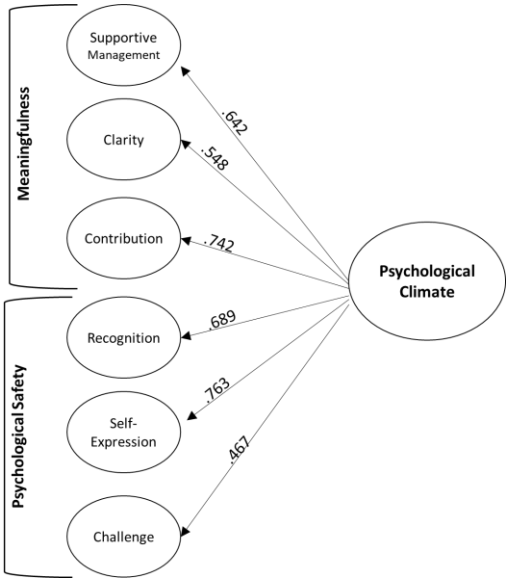


Figure 2.1 Psychological Climate as a higher order factor of Meaningfulness and Psychological Safety (Brown & Leigh, 1990. p.364).

One assumption of these measures is that meaning is related to the characteristics of the job, however this does not necessarily hold (Arnold et al., 2007). Piccolo and Colquitt's (2006) research into the job characteristics needed for organisational citizenship behaviours with 217 employees and their supervisors, found that it was relationships with inspiring, intelligence and influential leaders that created meaning, more than the perceived characteristics of the job. More recent definitions and measures of meaning have focused on meaning as a construct: Martela's (2018) study defines meaning as having three components: significance, self-realisation and broader purpose. This is reflected in Steger et al.,'s (2012) Work as Meaning Inventory. Using 370 employees from a research university, Steger et al., (2012) developed the measure to move beyond job specific elements. They considered three factors: Positive meaning, Meaning Making through Work and Greater Good Motivations (see table 2.6). Using confirmatory factor analysis, the resulting 10 item questionnaire achieved a significant good fit.

Subscale	Item	Loading on Sub-Scale
Positive Meaning	1. I have found a meaningful career	.92
	4. I understand how my work contributes to my life	.60
	5. I have a good sense of what makes my job meaningful	.82
	8. I have discovered work that has a satisfying purpose.	.87
Meaning making Through Work	2. I view my work as contributing to my personal growth	.70
	7. My work helps me better understand myself	.82
	9. My work helps me make sense of the world around me	.86
Greater Good Motivations	3. My work really makes no difference to the world (R)	.60
	6. I know my work makes a positive difference in the world	.80
	10. The work I do serves a greater purpose	.88

Table 2.6 Items from the Work as Meaning Inventory (WAMI) and Factor Loadings (Steger, Dik, & Duffy (2012)

Ashmos and Duchon's (2000) Workplace Spirituality scale was developed using 696 employees of four US hospital systems. The 66 survey questions loaded on six factors of: conditions of community, meaning at work, inner life, blocks to spirituality (in the workplace), personal responsibility and positive connections with other individuals. However, the challenge with such measures is that without measuring

workplace performance, it is difficult to quantitatively measure the "bottom line" benefit of meaningfulness at work.

There is much to suggest that meaning is a key psychological resource to deal with life and work stresses. An international study of 15000 employees across 8 countries in the early 1980s indicated that work ranked either the most, or second most important aspect of the respondent's life (Harpaz & Fu, 2002). Those who said their work was meaningful and/or served some greater social or communal good report better psychological adjustment and well-being (Arnold, et al., 2007).

Perceiving one's work to be meaningful or purposeful and to serve a higher purpose are key. The CIPD argue that those who find their work meaningful have higher well-being (CIPD, 2016) and that this is therefore critical for future job design (CIPD, 2015).

2.1.3.2 Mastery/Self-efficacy

Unlike meaningfulness, there is a significant body of research on self-efficacy. This has been defined as a belief in ones belief in one's capability. Mastery and Self-Efficacy have been demonstrated to be key to coping (Pearlin & Schooler, 1978; Thoits, 1995), stress and psychological adaptation (Rini et al., 1999; Thoits, 1995) and exercising control (Bandura, 1997) In one study, Judge, Locke and Durham (1998) expanded Bandura's model of task specific self-efficacy to create a new 10 point generalised self-efficacy scale: this was thought to measure core self-evaluations (CSE) of the perceptions of an individual's ability to cope with life. Their study of 3 sample groups and their significant others: 165 Doctors and their significant others, 158 Business college graduates and 132 Israeli students and their significant others showed that self-efficacy correlate significantly and positively with life satisfaction. The four component CSE model was tested using CFA and showed positive relationships with job and life satisfaction for all groups.

Given that Psychological Safety has been considered primarily a team construct, research investigating the relationship between individual self-efficacy (SE) and Psychological Safety has been scarce. Work by Roussin et al. (2018) with 129 nurses and physicians in a hospital in Spain used Edmondsons Psychological Safety questionnaire, the Occupational Self-Efficacy scale and a self-measure of participative performance to investigate the relationship between Psychological Safety and self-efficacy (Schyns & Von Collani, 2002). Using a regression analysis they found that Psychological Safety was a strong predictor of speaking up when colleagues made a mistake, with self-efficacy contributing little to the regression analysis. In contrast, Psychological Safety accounted for 19% of the variance, in a measure of when speaking up if

unclear about something and self-efficacy added a further 11% to this variance. This provides an interesting perspective, suggesting that self-efficacy may only affect employee voice in particular types of scenarios for speaking up. However, this study measured hypothetical responses to scenarios. This should be treated with caution as there is debate as to whether hypothetical scenarios provide accurate representation of actual intent

The presence of strong employee voice, or the willingness to speak up infers that the individual feels psychologically safe enough to voice their opinions (Avey, Wernsing & Palanski, 2012). In their study into ethical leadership and employee voice, Wang et al. (2015) demonstrated that Self Efficacy was significantly related to Employee Voice. An interesting study tested the hypothesis that managers with low self-efficacy would not solicit or implement the outputs of employee voice (Fast, Burris & Bartel, 2014).The five-point Solicitation of Voice scale and a measure of perceived self-efficacy (Chen, Gully & Eden, 2001) was used to assess managerial efficacy. Results showed that managerial self-efficacy was positively related to solicitation of employee voice. The role of the leader has been recognised as being a key element in team Psychological Safety (Detert & Burris, 2007; Edmondson et al., 2016; Schaubrook, Lam & Peng, 2011), however this study suggests why leaders may resist employee voice and how the leaders own self-view can impact individuals Psychological Safety. A further study particularly relevant for today's uncertain environments tested 78 employees on a measure of self-efficacy, role ambiguity and levels of stress (Thompson & Gomez, 2014). Results indicated that self-efficacy moderates the relationship between role ambiguity and levels of stress.

Although research investigating the specific relationship between self-efficacy and Psychological Safety is limited, there is research which suggests that self-efficacy is a key personal resource for dealing with either life or work challenges. One explanation for the current findings is that self-efficacy may contribute to Psychological Safety by moderating the environmental uncertainties, encouraging leaders to listen to others and creating job satisfaction. However, in these studies there is a lack of consistency around the measurement of self-efficacy which will be further discussed in this thesis.

2.1.3.3 Optimism

Having a positive outlook has been cited as being key to dealing with life's stresses. The belief that good things will happen is referred to as optimism (Carver & Scheier 1990, 2002; Cozzarelli 1993; Rini et al., 1999) and has been linked to happiness, perseverance, achievement and health (Cozzarelli, 1993; Peterson, 2000; Segerstrom et al., 1998; Snyder et al., 2001;

Taylor et al., 2000). However, to date, there have been no studies specifically exploring the role of optimism in Psychological Safety. Once again most likely this is due to Psychological Safety having been seen as a team construct.

Research has been presented to suggest that meaningfulness, self-efficacy and optimism may be important resources for Psychological Safety. The construct of meaningfulness in this study is that defined by Kahn (1990) and used by May et al., (2004) measuring extrinsic mechanisms of meaningfulness such as task importance and supervisor relations. This research aims to determine the relationship (if any) between an individual's intrinsic psychological resources and Psychological Safety. Thus the focus will be on intrinsic resources such as self-efficacy and optimism. Kahn's s model defines psychological resources in his "Availability" Dimension, which has four categories:

1. **Physical Energies:** Existing levels of physical resources available for investment into role performances.

   Kahn identifies the need to have the physical energy to carry out your role. His initial research demonstrating this was based on physically demanding roles, but later research with office based employees suggested that physical exhaustion could be present as a result of long hours. Rest and sleep have shown to restore personal resources (Barnes et al., 2011; Baumeister, Muraven & Tice, 2000; Zohar et al., 2005). Without sufficient sleep or rest, energy and emotional resources are depleted, therefore reducing their availability when dealing with challenge or adversity (Zohar et al., 2005).

2. **Emotional Energies:** Existing levels of emotional resources available for investment into role performances.

   In emotionally charged situations expressing or suppressing emotions at work requires the deployment of cognitive resources (Xanthopoulou, Bakker & Fischbach, 2013). The Conservation of Resources model (Hobfoll, 1989) and the Job Demand-Resource model (Bakker, 2011) suggest that having plentiful cognitive resources would enable better management of emotional resources.

3. **Insecurities:** Levels of confidence in own abilities and status, self-consciousness and ambivalence about fit with social systems that leave more or less room for investment of self in role performances

   Kahn noted that employees who felt insecure did not engage fully in the workplace. Insecurities about their 'self' led to "inner debates" that resulted in "little room" for engagement in external activities (Kahn, 1990, p.716). Psychological resources were spent on concerns about being

judged, their abilities, their status, their role or managing values dissonance. The management, suppression or avoidance of such self-talk or negative automatic thoughts have been shown to deplete available cognitive resources (Baumeister et al., 1998; Mikulincer, Dolev & Shaver, 2004).

4. **Outside life:** Issues in people's outside lives that leave them more or less available for investments of self during role performances.

   Having a perceived social support network has been found to be a coping resource through the provision of emotional or experiential support (Carmeli, 2007; Sarason, Sarason & Pierce, 1990; Thoits, 1995; Werner, 1993). However, more recently, research has produced data to suggest that social support had no modifying effect on workplace stress (Vammen et al., 2019) or emotional demands (Huynh, Xanthopoulou & Winefield, 2013).

The rise of the Positive Organisational Behaviour movement has resulted in further research into the psychological resources required for performance in the workplace (Bakker et al., 2005, 2008; Luthans et al., 2007c, 2010; Luthans, Avey & Patera, 2008a; Luthans & Avolio, 2009a; Peterson et al., 2011). Historically, research on intrinsic psychological resources was focused on dysfunctional human behaviour: thus 'personal coping resources' were framed in the context of psychiatric symptoms (Wheaton, 1983); 'internal resources' in the context of schizophrenia (Kohn, 1972); generalised resistance resources in the context of health and disease, later referred to as "sense of coherence" (Antonovsky, 1993); resources for cognitive adaptation in the context of health (Taylor, 1983); psychological resources in the context of physical health (Taylor et al., 2000) and personality characteristics as coping resources for stress (Aldwin, Sutton & Lackman, 1996). In the organisational context, this would suggest that researchers are attempting to find new ways to improve people, by finding the faults in and shortcomings of performance (Luthans et al., 2007a; Seligman & Csikszentmihalyi, 2000; Sheldon & King, 2001). The Positive Organisational Behaviour (POB) movement looked to change this by moving away from "repairing the worst things in life to also building positive qualities" (Seligman & Csikszentmihalyi, 2000, p.5). POB has been defined as "the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today's workplaces" (Luthans, 2002 p.698). It aimed to study the positive traits and characteristics of managers and employees, to shift some of the organisational emphasis from some of the "worst things in life", to the "best things in life" (Luthans & Church, 2002 p.58). In doing so, this aims to enable both the individual and organisations to "thrive and prosper" (Luthans & Church, 2002 p.58).

In order to operationalise this, Luthans (2002) identified the "positive psychological capacities" (p.59) required of employees, creating the construct of Positive Psychological Capital.

2.2 Positive Psychological Capital

2.2.1 The Origins of Psychological Capital

The "psychological capacities" to which Luthans refers are also referenced as "capabilities" (Luthans, 2002 p.699), "positive capacities" (Luthans, Youssef & Avolio, 2007b, p.6), "psychological resources" (Avey, Luthans & Youssef, 2010 p.431; Wang et al., 2017,p.4) "constructs" (Luthans et al., 2007a, p.542; Peterson & Luthans, 2003, p.26) "positive concepts" (Luthans & Jensen, 2002, p.304) "positive states" (Luthans et al., 2005, p.249), "factors" (Luthans et al., 2006a, p.388) and "psychic resources" (Hmieleski & Carr, 2007 p.1). For the purpose of this thesis, these will be referred to a Psychological Resources.

The process by which Luthans and Church (2002) selected the final Psychological Capital resources is not documented. Of the 61 articles published by Luthans and colleagues between February 2002 and January 2020 on the topic Psychological Capital, its four components are presented as a fait accompli. Youssef-Morgan (2014) states that the final components were drawn from the positive psychology literature, the principles of which are to focus on the positive qualities than "make life worth living" (Seligman & Csikszentmihalyi, 2000, p.5). Organisational behaviour theories and practises often stem from psychological research on human failings and weaknesses with a view to fixing the dysfunctional. Positive Psychology looks to understand the strengths that enable performance, growth and achievement.

In identifying the psychological resources for employee performance, Luthans was keen to ensure that their characteristics should be applicable and relevant for organisations, meeting specific criteria. These criteria were:

- The psychological resources should reflect the Positive Organisational Behaviour movement by reflecting positive states (Luthans et al., 2013). Indeed, this criterion has been used synonymously with positivity (Luthans, Youssef & Avolio, 2007b; Story et al., 2013).
- The psychological resources needed to be grounded in theory with valid measurement and discriminant validity.
- Importantly they needed to be related to performance improvement, and therefore be "state-like" to enable continued development (Luthans, 2002).

- The psychological resources should be relatively unique to the field of organisational behaviour (Luthans, 2002, p.699; Luthans, Youssef & Avolio, 2007b, p.11). This is defined by Youssef-Morgan (2014) as ensuring the psychological resources identified were work-related and set within a positivist paradigm, with an "emphasis on tangible results and quantifiable performance outcomes" (p.132).

Early work on Positive Organisational Behaviour identified the resources that were considered appropriate to meet the selection criteria. These included Confidence (or Self-Efficacy), Hope, Optimism, Subjective Wellbeing and Emotional Intelligence (Luthans & Church, 2002). However, by 2004 Subjective Wellbeing and Emotional Intelligence had been replaced with resilience. Although Luthans and Church (2002) argued that emotional intelligence had "problems with measurement" (p.70) no explanation for the replacement of Subjective Wellbeing was given. Ultimately it was concluded that the resources that "best meet the POB criteria and are currently most relevant" and can "be most readily managed for competitive advantage" (Luthans & Youssef, 2004 p.154) were hope, optimism, self-efficacy and resilience. In their book of 2007, Luthans et al., consider a further 5 resources for possible inclusion in the model and a further 6 for possible future inclusion (see table 2.7). However in the most recent studies using Psychological Capital, the original four resources of Hope, Optimism, Self-Efficacy and Resilience are used (Chatterjee & Mohanty, 2020; Gu, Tang & Wang, 2019; Miao et al., 2020; Morgan, Parker & Roberts, 2019; Sun & Huang, 2019).

	Theory Based	State-Like/ Malleable	Measureable	Work Performance Related	Other Positive outcomes
Current Psychological Capital Resources					
Efficacy	✓	✓	✓	✓	✓
Hope	✓	✓	✓	✓	✓
Optimism	✓	✓	✓	✓	✓
Resilience	✓	✓	✓	✓	✓
Cognitive & Affective Strengths (Current Possible Additions)					
Creativity	✓	?	✓	?	?
Wisdom	✓	✓	✓	✓	?
Flow	✓	✓	✓	✓	✓
Wellbeing	✓	✓	✓	✓	✓
Humour	✓	✓	✓	?	✓
Social or Higher Order Strengths (Future Inclusions)					
Emotional Intelligence	?	?	?	?	?
Spirituality	✓	✓	✓	✓	✓
Authenticity	✓	✓	✓	✓	✓
Courage	✓	✓	✓	?	?
Gratitude	✓	✓	?	?	✓
Forgiveness	✓	✓	✓	?	✓

Table 2.7 Psychological Resources Considered for Inclusion in the Psychological Capital Model (Luthans, Youssef & Avolio, 2007, pp145 – 206)

2.2.2 The Components of Psychological Capital

These four unique and yet associated constructs (Avey et al., 2011) together created the higher order construct of Psychological Capital (Luthans, 2002; Luthans & Youssef, 2004; Luthans, Youssef, & Avolio, 2007b). The following section will review each of these resources individually.

2.2.2.1 Optimism

Based on the work of Scheier & Carver (1985), optimism refers to an individual's expectations and beliefs about outcomes. Optimism is the belief that "good, rather than bad things will happen and that things will go your way" (Scheier & Carver, 1985, p.219). Considered to reflect a "belief about the nature of the world" (Rotter, 1966 p.10) optimism was thought to be a general, trait-like concept referred to as dispositional optimism (Scheier & Carver, 1985, 1992).

Optimism has been linked to happiness, perseverance, achievement and health (Cozzarelli, 1993; Peterson, 2000; Segerstrom et al., 1998; Seligman, 1998; Snyder, Sympson & Michael, 2001; Taylor et al., 2000). Indeed, early studies into optimism focused on its role on both physical and mental health outcomes (Fibel & Hale, 1978; Mulkhana & Hailey, 2001; Scheier & Carver, 1985; Tiger, 1995). Building on research around expectancy for success (Fibel & Hale, 1978; Phares, 1957; Rotter, 1966) Scheier and Carver explored the effects of situation-specific expectations, determining that expectation for success resulted from a general self-regulatory mechanism that manages discrepancies between current and desired state. Research on optimism and methods of coping led them to consider optimism a strong predictor of behaviour (Scheier & Carver, 1985). In a study of 290 undergraduates, published in 1986, Scheier and Carver measured optimism using the Life Orientation Test (Scheier & Carver, 1985) and Ways of Coping Checklist (Folkman & Lazarus, 1980, 1985). Optimism was shown to be positively associated with the use of problem focused coping and positive reinterpretation in controllable situations. For uncontrollable situations, optimism was positively correlated with acceptance/resignation. This study was repeated several weeks later providing the students with hypothetical situations. Responses were written by participants, then coded for analysis. Partial correlations (controlling for the number of words) confirmed the findings of the quantitative study: significant positive correlations were found between optimism and problem focused coping and positive re-interpretation.

While research by Carver and Scheier has primarily focused on emotional and physical health, studies in the workplace context suggest that optimism is a predictor of job

satisfaction and performance. Jensen et al. (2007) issued 90 bank employees (managers and tellers) with the LOT, amended to measure sate hope and Hackman and Oldham's (1980) scale for job satisfaction. Participants were asked to rate their performance, however their supervisors also provided information as to participants performance, based on organisational competencies. A significant positive relationship was found between optimism and job satisfaction for both and managers. Similarly, significant positive correlations were found between optimism and self-rated job performance. However when the relationship between optimism and supervisor rated performance was tested, managers data showed a strong positive correlation but the relationship was not significant for tellers.

Other studies on the relationship between optimism and job performance have been less conclusive. Wanberg and Banas' (2000) study on 130 Housing Association officials found that correlations between optimism (measured using the LOT) and job satisfaction (measured using the Michigan Organizational Assessment Questionnaire: Cammann et al., 1983) was not significant. However, in a study with call centre employees (Tuten & Neidermeyer, 2004) a strong negative correlation was found between optimism (LOT) and both a nine item job satisfaction questionnaire devised for the study and self-reported performance. Additionally, optimists were shown to have lower perceptions of stress and work-conflict than pessimists. Interestingly a key difference between these studies was that where the trait LOT measurement was used (Tuten & Neidermeyer 2004; Wanberg & Banas, 2000), correlations between optimism and work variables were low. The study using a state measure of the LOT, showed positive correlations between these variables (Jensen et al., 2007). Indeed, work by Kleumper, Little and DeGroot (2009) explored the difference between state and trait optimism on job related outcomes such as job satisfaction and performance. Using state LOT and trait LOT in addition to Hackman and Oldham's job-satisfaction scale (1975) and an internal organisational measure of task performance as rated by the participant's supervisor, 118 workers of a residential youth treatment facility were surveyed. Traits were assessed upon joining the organisation, and 3 months later. As table 2.8 shows, the correlations between job satisfaction and task performance

	Trait Optimism	Job Satisfaction	Task performance
State Optimism	0.64*	0.44*	0.16**
Trait Optimism		0.30*	-0.01
Job Satisfaction			0.02

*=p<.05 **p<.10

Table 2.8 Correlations between Trait Optimism, State Optimism. Task Performance and Job Satisfaction (Kleumper, Little & DeGroot, 2009)

were stronger for state optimism than for trait optimism. A hierarchical regression analysis indicated that for job satisfaction, trait optimism was a stronger predictor than state optimism although for task performance state and trait optimism were significant predictors.

Further research has investigated the role of state in levels of optimism. Fibel and Hale (1978) noted that an individual's evaluation of a particular situation could alter the expectation of success. Kavussanu and McAuley (1995) observed the positive impact of exercise on optimism. Carroll, Sweeny and Shepperd (2006) noted that changes in environmental conditions, in this case anticipating personal feedback, resulted in a decline in optimism levels. These findings suggest the importance of a more state-like aspect to optimism. While the research evidence supports the theory that optimism is both trait and state like (Kluemper, Little & De Groot, 2009; Luthans, 2002; Luthans & Youssef, 2007; Seligman, 2006) these might have different impacts on behaviour. Peterson (2000) uses "big optimism" and "little optimism" to define trait and state elements respectively. Big optimism, or trait optimism, enables people to be positive without any specific expectations – "free floating" optimism (Peterson, 2000 p.45). For example, "One day I will travel abroad". This reflects the motivational and emotional aspects of Optimism. There is no specific plan or action to this. State optimism however, includes a cognitive element: which adds a reality check to optimism. As such, situations or context may override the more general trait optimism; "I can't travel abroad at the moment because I don't have enough money, but I will one day" (Carver & Scheier, 1990; Kluemper et al., 2009; Peterson, 2000).

State like optimism appears to enable individuals to focus on outcomes that are most likely to be successful. Aspinwall, Richter and Hoffman (2001) observed that when provided with (unsolvable) anagram tasks, participants high in optimism disengaged from activities that would not reap success sooner than those low in optimism. However, where success was possible, those high in optimism outperformed those low in optimism. This suggests that those who are high in optimism are able to evaluate tasks that are unlikely to achieve a successful outcome and switch away from them, reallocating cognitive resources to tasks in which they could achieve success sooner than those with low optimism. Those high in pessimism have been found to spend longer in denial and disengagement (Carver et al., 1993; Klein & Helweg-Larsen, 2002; McKenna, 1993; Scheier, Weintraub & Carver, 1986).

Optimism may be particularly important when working in a VUCA environment. Changes can be imposed as a result of external forces or internal decisions. Being high in optimism may enable acceptance of the change given that it is not possible to control this. In support of this, a study with 197 directors or CEO's of Small – Medium Enterprises (SME's) in Singapore was designed to understand the factors that enable successful organisational change. The results demonstrated a correlation between successful organisational change and optimism about the organisation (Tan & Tiong, 2005). However, the direction of this relationship is not clear.

Volatility and ambiguity may scupper efforts to understand the future and plan ahead. A lack of understanding as to the cause and effect of an issue may diminish confidence in outcomes (Bennett & Lemoine, 2014a, b). However, the optimist may still believe that whatever the outcome, it will be positive. That is not to advocate "blind" optimism, always believing in a successful outcome may be unrealistic. Even when made aware of increased crime, Tyler and Cook (1984) discovered that although individuals acknowledged the increase in crime at a societal level, they still did not believe it would happen to them. Indeed, in this day of increased awareness of internet fraud and identity theft, most users of IT still select weak passwords and use the same password multiple times (Yan et al., 2004). Optimism needs to be balanced to mitigate against the naive setting of unrealistic goals, the ability to have "dreams but not fantasies" (Peterson, 2000 p.51). The Psychological Capital model mitigates the risk of blind optimism with the inclusion of Hope.

2.2.2.2 The Hope Component of Psychological Capital

There have been challenges as to whether Hope and Optimism describe separate factors (discussed further in the Results section). Certainly they both work from the same premise - that human behaviour is goal directed. However, Carver and Scheier (2002), Snyder et al. (1996) and Luthans (2002) seek to differentiate them. Whereas Optimism refers to the individual's belief or confidence in successful outcomes, hope refers to action; the belief that goals can be achieved despite any potential obstacles through agency i.e. goal directed energy and pathways, and means to meet the goals. Hope and optimism are considered separate because there are times when belief that a goal can be reached is less about how the goal is achieved (hope), and more of a belief that it can be (optimism). Scheier and Carver (2002) use the example of recuperating cancer patients. They remain optimistic that the cancer will not return. Whether it does may be out of their control. There may be no personal agency involved (hope), just a belief and confidence that it won't. Hope and

Optimism have a symbiotic relationship. Optimism provides the belief in a successful outcome, while Hope provides the belief in the means to the outcome. If optimism is the 'wish', then hope is the "willpower" and the "waypower" to a successful outcome (Youssef & Luthans, 2007 p.778).

Research into hope has provided evidence that higher hope is related to increased self–esteem, sporting and academic achievement (Cheavens, Michael & Snyder, 2005; Curry et al., 1997; Snyder et al.,1991), improved recovery from ill health or injury (Barnum et al., 1998; Callan, 1989), recovery from mental illness (Elliott et al., 1991; Irving et al., 2004; Snyder et al., 1991), management of pain (Snyder et al., 2005) and psychological wellbeing (Wrobleski, & Snyder, 2005). In the workplace, higher hope has been linked with higher performance, satisfaction and retention rates (Luthans & Jensen, 2002; Peterson & Luthans, 2003) and engagement (Ouweneel et al., 2012). Leaders with higher hope were shown to create higher quality solutions to work problems (Peterson & Byron, 2008). This has implications for organisations, because if hope has a state like component, then these skills may be able to be developed in leaders, thereby improving performance.

Snyder, Irving & Anderson (1991) defined Hope as having two distinctive cognitive components: personal agency (goal directed energy) and pathways to goal achievement. These were initially considered to be, and measured as, dispositional traits. However, hope has been recognised as a state that can be developed through educational interventions (Luthans et al., 2006a; Snyder et al., 1991; Valle, Huebner & Suldo, 2006). As such, Snyders Adult Hope Scale, the most "widely used measure" (Scioli et al., 2011, p.82), has also been developed as a State Hope Scale (Snyder et al., 1996).

There is criticism that the conceptualisation of hope as an expectation of goal achievement is too narrow (Herth, 1992; Scioli et al., 2011). Herth (1992) argues that as well as the goal achievement expectation, hope also contains the elements of time-orientation and future focus. He used this conception to develop a 30 item Herth Hope Scale and a 12 item abbreviated version, the Herth Hope index accordingly. However this was developed for the clinical context using qualitative data from chronically ill patients which might make it unsuitable for use in workplace settings.

Scioli et al. (2011) also define hope as multi-dimensional, arguing that it consists of "biological, psychological and social resources" which includes "mastery, attachment, survival and spiritual systems" (p.79). A six factor, 56 item Comprehensive Trait Hope Scale (CHS-T) and 4 factor, 40 item Comprehensive State Hope Scale (CHS-S) were developed.

However, the factor most relevant to POB criteria is the 8 question mastery factor, which mirrors Snyder's Hope scale, measuring goals and pathways, the remaining 5 factors not being work related.

Defining hope as a "positive motivational state" (Snyder, Irving, and Anderson, 1991 p.287) in which there is agency and pathways to goals, might increase the risk of setting unrealistic goals. False hope syndrome has been posited by Polivy and Herman (2000). In their work with dieters, they find that more often than not, people set unrealistic goals in terms of time taken or impact of goal achievement, creating False Hope Syndrome. This they believed was due to participant's over-confidence in managing the physical and mental obstacles that come with weight loss and thus not revising their expectations after failure to achieve their target weight.

Despite the findings of Polivy and Herman (2000), there has been much criticism of the construct of False Hope (Corrigan, 2014; Lowe, 2003; Snyder & Rand, 2003). Extant research has found that those with high hope were able to review goals, set and achieve challenging goals and were able to manage cognitive and physical obstacles to goal achievement (Snyder, Cheavens & Sympson, 1997; Snyder, 2002; Irving et al., 2004). Garland (1983, 1985) found that even unattainable goals or stretch goals led to improved performance from the pre-goal target. This suggests that those in Polivy and Herman's (2000) study had particularly low hope. In a dieter study, those who "failed" blamed themselves rather than the program but credited the programme, rather themselves for success (Polivy, 2001), the exact opposite of the expected explanatory style of an optimist. This suggests that these dieters may also have been low in optimism. Interestingly, the dieters, having described their ideal weight (often unrealistically at up to a third of their body weight), were described in the study as having "failed" to achieve this, even if some weight was lost (Polivy, 2001). The research by Seek Lee et al (2016, 2018) on the relationship between growth mind-set and hope, might suggest that this binary fixed mind set of "failed" weight loss may have impacted on levels of Hope. In their research with both workers (N=368) and mothers (N=290), hope was shown to be positively related to a growth mind-set (Seek Lee & Jang, 2018; Seek Lee, Ui Park & Kyoung Hwang, 2016). However, as Polivy & Herman's (1999) study measured neither hope, optimism or growth mind set it is not possible to determine the impact of each factor.

Unlike optimism, hope is considered a solely cognitive process through which realistic and yet challenging goals are set. Any emotions are considered a consequence of this process

rather than an input to the process (Luthans, Youssef-Morgan & Avolio, 2015; Snyder et al., 1991). Luthans et al., (2015) argue that hope is more than just goal setting. It is "opening ourselves up to new possibilities and experiences beyond what we thought was possible" (p.100). Goal setting leads to learning, growth and creative problem solving. This is particularly important in a VUCA environment whereby organisations are dealing with "unknown unknowns" (Bennett & Lemoine, 2014b p.1) resulting in ill-defined problems and novel situations (Chan, 2000). Employees are expected to be able to adapt and learn (Pérez-Bustamante, 1999; Griffin & Hesketh, 2003). To develop innovative and creative ways to solve unfamiliar problems (Hill & Davis, 2017; Kark & Carmeli, 2009; Nelson & McCann, 2010). Optimism can offer a positive view of outcomes. Hope offers the pathway and agency to achieve this. However our employee needs to have the belief that they have the capability to follow hope's pathway to goals. Self-Efficacy is required.

2.2.2.3 The Self-Efficacy Component of Psychological Capital

Self-Efficacy is defined as a belief in one's capabilities, either generally (trait level) or to execute a specific task within a given, specific context (state level), (Bandura, 1986, 1997; Stajkovic & Luthans, 1998a) and is based on the work of Bandura's social learning (1977) and social cognition theories (Bandura & Wood, 1989). Note, self-efficacy is not ability per se but the individual's perception or cognitive appraisal of their ability (Bandura 1977, 1982a; Luthans 2002; Stajkovic 2006).

Self-Efficacy (or mastery) has been associated with coping and resilience. Studies by Thoits (1994), Werner (1993), Rini et al. (1999) and Rutter (1987) identify self-efficacy as being a key mechanism in dealing with life challenges such as relationships, childhood adversity, pregnancy and parental loss, respectively. Bandura's work on self-efficacy originated in the clinical context of dealing with fears and phobias (1977, 1982a). However, research has extended this to the workplace and has demonstrated significant relationships between self-efficacy and performance (Bandura & Locke 2003; Cervonne, 1991; Stajkovic & Luthans 1998a, b; Tierney & Farmer 2002; Wood, Bandura & Bailey 1990). Those with high self-efficacy have been shown to be more accepting of challenging goals (Eden & Ravid, 1982) show more perseverance and effort towards high or challenging goals (Locke & Latham, 1990) and have improved quality of analytical thinking and problem solving (Bandura & Wood, 1989; Wood & Bandura, 1989; Wood, Bandura, & Bailey, 1990). In their meta-analysis of self-efficacy and work performance, Stajkovic and Luthans (1998a) demonstrated that self-efficacy was positively related to work performance. Particularly

relevant for today's environments, Thompson and Gomez, (2014) studied the role of self-efficacy in moderating workplace stressors such as role ambiguity. Findings showed that self-efficacy moderated the relationship between role ambiguity and depression. In highly role ambiguous situations, those with low levels of self-efficacy showed increased levels of depression.

Bandura's work measured the magnitude and strength of an individual's self-efficacy (1977, 1982a, 1982b) identifying four sources of self-efficacy: performance accomplishments, vicarious experience, persuasion by others and physiological environment which acknowledges the affective element in perceived efficacy (1977).

Performance accomplishments: research suggests that the more successes we have, the more our perception of our efficacy increases. Bandura, Blanchard and Ritter (1969) in their work with snake phobias, found that having mastered their fear of snakes in the laboratory, participants were able to apply this in subsequent encounters with snakes outside of this environment. Research by Lane, Lane and Kyprianou (2004) on 205 postgraduate management students found that perceived past academic success was positively correlated with self-efficacy to pass the post-graduate qualification. Lane's (2002) work with boxers indicated that self-efficacy scores were predicted by perceived performance.

Perceived successful performance not only develops our resilience against any failures (as long as they don't outnumber the successes), but also increases our perception of efficacy, but only in other similar activities (Bandura, 1977).

Self-Efficacy can vary in magnitude depending on the complexity of the task. Despite their findings that self-efficacy was correlated to work performance, Stajkovic and Luthans (1998a) acknowledged that that task complexity moderated self-efficacy. Self- efficacy can be high for simple tasks, but lower for tasks that are perceived as more complex, although what is determined as "complex" is subjective (Campbell, 1988). The strength of self-efficacy is also dependant on the duration of experiences of success and thus the extent to which self-efficacy has been reinforced (Bandura, 1994).

Vicarious Experience: Seeing those around you succeeding in achieving a task without negative consequences may increase the strength of your self-efficacy. Bandura et al. (1969) noticed that levels of fear towards snakes dropped after having

watched just 2 videos of people successfully handling snakes. The more videos watched, the greater the drop in fear levels. An interesting study on attitudes towards police based on vicarious experiences ("someone you know/don't know has had a positive/negative experience of the police) showed that negative vicarious experiences unsurprisingly increased negative attitudes toward the police, while positive vicarious experiences were associated with a reduction in negative attitudes toward the police (Rosenbaum et al., 2005).

There is little research into vicarious experience in organisations, although vicarious learning had been recognised as a valuable both between and within organisations. Kim and Miner (2007) studied vicarious learning between 2,696 US banks over five years noting that failure, or near failure, produced valuable learning for remaining banks. Manz and Sims (1981) argues the importance of vicarious learning in establishing behaviour change in employees. Employee's observing successful behaviours in others may imitate or model such behaviours. Certainly in the context of Psychological Safety, the team leader's behaviour in particular sets the tone for what behaviour results in success or failure (Edmondson, 1999).

However, vicarious experience relies on a comparison process between the individual and the others who they see succeeding. This affective process of self-evaluation may not necessarily improve self-efficacy. Langer (1979) observed that the presence of another "superior" individual led to a reduction in performance of a task in which there was previous success. Therefore, self-efficacy might also be dependent on the perceptions of the person being observed, their judgements and values about others and what they are doing.

Persuasion by others: Bandura (1977) acknowledged the weakness in the effect of persuasion by others on self-efficacy, since the process of someone merely telling you that you can do something, does not make it so. As he found in his study with snakes: merely learning the facts about snakes did not change the negative attitude towards them (Bandura et al., 1969). The value here, Bandura suggests, is around the others encouraging achievement. Although the relationship between parties and associated affective processes such as trust and Psychological Safety will impact the effectiveness of the persuasion. This is particularly relevant in the workplace where persuasion may lead employees to be suspicious of agendas (Edmondson & Harvey, 2017; Schabracq & Cooper, 2000).

Physiological environment (emotional arousal). This acknowledges the role of the individual's affective and psychological processes on perceptions of self-efficacy. Bandura refers to the emotional arousal created by the environment. Where the environment is perceived as threatening or generating fear, this debilitates performance (Arnsten, 2009; Ball et al., 2013; Bandura, 1977; Figueira et al., 2017) ultimately impacting perception of efficacy.

Optimism and Self-Efficacy share a commonality. Bandura (1977) describes self-efficacy as consisting of two expectations: Efficacy Expectation he defines as what an individual believes they can do and Outcome Expectations he defines as what they believe the likely outcome of what they can do will be. The outcome expectation relates to Optimism: the confidence that the outcome or goal can be achieved (Bandura, 1997; Carver, Scheier & Segerstrom, 2010).

Confidence refers to having certainty about the output of one's efficacy (Stajkovic, 2006 p.1208) and can be derived from self-efficacy. Bandura illustrates the relationship between ones self-efficacy and outcome judgement (confidence) in a four box model (see table 2.9), illustrating that an individual may be "assured of their capabilities but give up trying because they expect their efforts to produce no result" (1982a, p.140).

SELF-EFFICACY JUDGEMENT	OUTCOME JUDGEMENT -	OUTCOME JUDGEMENT +
+	Social Activism Protest Grievance Milieu Change	Assured, Opportune Action
-	Resignation Apathy	Self-Devaluation Despondency

Table 2.9 Self-Efficacy Mechanisms in Human Agency (Bandura, 1982a, pp140)

Relationships between confidence and self-efficacy as separate constructs have been identified. Leganger, Kraft and RØysam (2000) measured 421 Norwegian Smokers on their self-efficacy at giving up smoking and their outcome expectancies of doing so (positive or negative). A regression analysis indicated that self-efficacy, negative outcomes and positive outcome expectations accounted 33% of the variance in intention to quit. This suggests that that self-efficacy is as important as outcome expectations in changing smoking behaviour.

Stankov et al. (2012) measured confidence and self-efficacy in maths (N=1940 15 year old students) and English (N=1786 15 year old students). Defining confidence as being "certain about the success of a particular action" (p.747), students were measured on their self-

efficacy, asked to perform English and Maths tests and then asked to rate their confidence of their answer being correct.

For English and Maths accuracy and confidence were highly correlated, but correlations were lower between self-efficacy and accuracy, and self-efficacy and confidence (see table 2.10).

Regression analysis showed that of the seven predictors of English and Maths achievement, confidence was the highest predictor for both English and Maths (see table 2.11).

	Accuracy	Confidence
Confidence	.69 / .57	
Self-Efficacy	.29 / .14	.35 / .31

English scores lower half of cell (N=1605)
Maths scores higher half of cell (N= 1727)
No P scores reported.

Table 2.10 Correlations between Accuracy, confidence and self-efficacy in Maths and English (Stankov, Lee, Luo & Hogan, 2010).

However, in a similar study, (Pajares & Miller, 1994) self-efficacy was established to be the greatest predictor of maths performance. Pajeres and Miller argued that beliefs regarding confidence are part of an individual's self-concept and "represent different phenomena" (p.194). Working with 350 undergraduates, self-efficacy concerning maths was tested using Dowling's (1978) maths self-efficacy scale and the maths performance using his Mathematics Problems Performance scale. Perceived importance of maths was tested using a measure adapted from Shell, Murphy and Brunning, (1989) while maths self-concept was tested using the Self-Description Questionnaire (Marsh, 1992). Correlations between maths self-efficacy and maths performance, maths self-efficacy and maths self-concept and maths self-concept and maths usefulness were high. Path analysis confirmed that self-efficacy significantly predicted maths and self-concept. However, using self-concept to measure confidence, even at a specific level of maths, may be erroneous as by their own admission, confidence is only part of self-concept. Shavelson, Hubner and Stanton (1976) argue that the variety of definitions of self-concept make measurement

Predictors of English Achievement:		
	β	**t-tests**
Confidence	.56	25.93**
Self-Efficacy	-.00	-.021
Predictors of Maths Achievement		
	β	**t-tests**
Confidence	.65	33.74**
Self-Efficacy	.05	2.08

**=p<.001

Table 2.11 Predictors of English and Maths achievement, Stankov, Lee, Luo & Hogan (2012)

"imprecise" (p.408) and their research identified 17 different conceptual dimensions that could be considered self-concept.

In today's environment, where jobs are "broader and more complex" (Chen, Gully & Eden, 2001 p.77) and change rapid, discrepancies between performance and self-efficacy expectations are more likely (Bandura, 1977). The rise of unexpected and new problems can create confusion and uncertainty as to what to do despite years of experience (Jentz & Murphy, 2005). Role ambiguity, role conflict and workplace uncertainty have been shown to undermine self-efficacy (Jackson & Schuler, 1985; Jex & Gudanowski, 1992; King & King, 1990; Li & Bagger, 2008; Thompson & Gomez, 2014). Addressing today's problems with yesterday's solutions will not always work (Petrie, 2011). As a result, the building blocks of self-efficacy have the potential to be eroded. Past performance accomplishments or vicarious experience cannot be relied upon to increase perceptions of efficacy.

Self-efficacy is still an important personal resource. However, in the VUCA context, its definition may need to be modified. The skills of today's employee are cognitive, "knowing what to do, when you don't know what to do" (Sepielli, 2014 p.1), testing new ideas and risk taking (Wilson & Lawton-Smith, 2016), problem solving and adapting (Pulakos et al., 2000) and self-awareness (Petrie, 2011).

2.2.2.4 The Resilience Component of Psychological Capital

Early studies of resilience were in the context of mental health with the aim of identifying the antecedents to the development of "competent or maladaptive behaviour" (Garmezy, 1986 p.501). Resilience research focused on children or adolescents deemed at "high risk" from adverse factors such as poverty (Cicchetti & Garmezy 1993; Cicchetti & Rogosch 1997; Egeland et al., 1993; Masten et al., 1990; Werner, 1993), low social economic status and family instability (Masten et al., 1990; Werner, 1993), parental mental health (Beardslee & Podorefsky, 1988; Garmezy, 1987; Masten et al., 1990; Werner, 1993), abuse and neglect (Cicchetti et al., 1997; Egeland et al., 1993) and more recently the impact of war (Masten & Narayan, 2012; Werner, 2012). These studies in developmental psychology share a common view that despite adversity or threats to normal development (Masten, 2001) resilience leads to good, or at least better than expected, outcomes (Windle, 2011).

While research into resilience has almost exclusively studied children, some longitudinal studies have followed these children into adulthood: examples include the Oakland Growth Study, the Berkley Guidance Study and the Berkley Growth Study from the 1920's and

1930's, Project Competence (Garmezy, Masten & Tellegen, 1984), the Kauai Studies by Werner (1993) and the Mother-Child study by Egeland Carlson & Sroufe (1993). By comparing those who ultimately achieved good outcomes in life despite early or continuing adversity, with those who did not, researchers identified factors that contribute to resilience. These included perceived social support (Gordon & Coscarelli 1996; Garmezy 1991; Hauser & Allen 2007; Luthar et al., 2000; Masten, et al., 1990; Masten & Narayan, 2012; McEwan, 2016; Rutter, 1987; Ryff & Singer, 2003; Tusaie & Dyer, 2004; Werner, 1993), social skills (Jowkar, Friborg & Hjemdal, 2012; Masten & Narayan, 2012), intelligence (Werner, 1993) and the environment (Garmezy, 1991; Gordon & Coscarelli,1996; Luthar et al., 2000; Masten et al., 1990). Such contributors to resilience have been termed protective factors (Garmezy, 1991; Richardson, 2002; Werner, 1993, 1995, 2012), assets (Bardoel, 2014; Fergus & Zimmerman, 2005; Richardson, 2002;) resources (Britt, 2016; Cicchetti & Rogosch, 1997; Cohn et al., 2009; Egeland et al., 1993; Fergus & Zimmerman, 2005; Gordon & Coscarelli, 1995; Masten, 2001; Masten & Narayan, 2012; Shin, Taylor & Seo, 2012; Staudinger, Marsiske & Baltes, 1993; Sutcliffe & Vogus, 2003), energy (Richardson, 2002) and strengths (Cicchetti & Garmezy, 1993; Luthar & Brown, 2007).

Adult research on resilience has primarily been in the context of psychological challenges such as bereavement and loss (Bonanno, 2004; Stroebe & Schut, 1999), post-traumatic stress syndrome (Fikretoglu & Liu, 2012; King et al., 1999; Maguen et al., 2006), depression (Dykman, 1998; Hobfoll et al., 2003; Holahan et al., 1999) and aging (Jeste et al., 2013; Ryff & Singer, 2003; Staudinger et al., 1993). Unlike research with children, studies with adults appear to suggest that adult resilience is a result of personal attributes such as mastery/self-efficacy/competence (Elder, 1998; Glantz & Sloboda, 2002; Hauser & Allen, 2007; Sutcliffe & Vogus 2003), optimism (Chang & Sanna 2001; Gillespie, Chaboyer & Wallis, 2007b; Gillespie et al., 2007a; Luthans, 2002; Scheier & Carver, 1985), planning (Masten et al., 2004; Rutter, 2012), self-enhancement (Bonanno, 2004), personal agency (Glantz, 2002; Hauser & Allen, 2007) as well as the individuals value or belief systems (Coutu, 2002; Masten et al., 2012). By drawing on intrinsic and extrinsic personal resources, individuals are able to cope and maintain equilibrium in performance and functioning (Bonanno, 2004; Cicchetti & Garmezy, 1993; Egeland et al., 1993; Glantz & Sloboda, 2002; Masten et al., 1990; McCubbin, 2001; Rutter, 1987; Staudinger et al., 1993; Van Den Heuvel et al., 2010).

However, the definition of resilience is still an "illusive concept" (Kumpfer, 2002 p.180). Most definitions of resilience are based on the work of Gamezy (1991), Masten (2001) and Rutter (2006) and refer to maintaining equilibrium or returning to pre-adversity functioning after a challenge (Bonanno, 2004; Zautra & Reich, 2010) (see Appendix F for definitions of resilience). Considered to be a result of normal, basic human adaptation systems (Bonanno, 2004; Glantz & Sloboda, 2002; Luthar, Cicchetti & Becker, 2000; Masten, 2001; McEwan, 2016; Staudinger et al., 1993; Wagnild & Young, 1993), they defined resilience as "the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances" (Masten, Best & Garmezy, 1990 p.426). However, not all researchers agree over how the process of resilience should be defined (see table 2.12).

Author	Year	A	B	C
Bonnano	2005			✓
Carver	1998			✓
Caza & Milton	2012			✓
Cicchetti	1997	✓		
Compas	2015		✓	
Egeland et al.,	1993	✓		
Garcia-Dia et al.,	2013	✓		
Garmezy,	1991	✓		
Gordon	1995		✓	
Glantz	2002	✓		
Luthans	2002		✓	
Luthar et al.,	2000	✓		
Masten & Wright	2010	✓		
Masten	2001	✓		
Masten Best & Garmezy	1990	✓		
McCubbin	2001/ 2000	✓		
McEwan,	2016	✓		
Meredith at al	2011	✓		
Naswall et al.,	2015		✓	
Rutter	2006	✓		
Tusaie & Dyer	2004	✓		
Wagnild & Young	1993	✓		
Zautra, Hall & Murray	2008	✓		
Column A - Adapt /Bounce Back to achieve Equilibrium Column B - Adapt /Bounce Back to achieve growth Column C - Adapt and Growth separate processes				

Table 2.12 Summary of Appendix F: The Definitions of Resilience.

Like Gordon (1995), Luthans (2002) broadens his definition of resilience, going beyond "simple adaptation" (p.702) defining it as: "in simple, but accurate terms, resiliency is the psychological capacity to rebound, to 'bounce back' from adversity, uncertainty, conflict, failure or even positive change, progress and increased responsibility" (p.702). Youssef and Luthans (2007) propose that resilience enables growth and learning. Indeed it has been suggested that resilience includes the ability to not just survive adversity but to "thrive" (Beltman, Mansfield & Price, 2011, p.186), "flourish" (Näswall et al., 2015 p.1) and achieve "positive growth" (Compas, 2006 p.226). There is certainly evidence to suggest that people do grow and learn as a result of trauma of challenge. For instance, Joseph, Williams & Yule (1993) measured

the changes in outlook of survivors of a ferry disaster (N=35) and found that the survivors no longer took people or things for granted (91%), were more tolerant and understanding (71%) and 50% were more determined to succeed in life.

This supports work by Tedeschi & Calhoun (1996, 2004) showing that positive personal change is higher in those who have experienced severe trauma. However, there is also evidence which fails to support this, finding instead that growth does not follow a trauma or challenging situation (Bensimon, 2012; Frazier et al., 2009; Videka-Sherman, 1985). For instance, in their research, Frazier et al. (2009) tested 1281 undergraduate students twice with 8 weeks between each testing. Measures included the Traumatic Life Events Questionnaire (Kubany, 2004) and the Post Traumatic Growth Index (Tedeschi & Calhoun, 1996) which measured both actual and perceived growth after trauma. 338 students experienced a traumatic event between time 1 and time 2 that caused "considerable to extreme distress" (p.917). The change in perceived growth as a result of trauma was positively correlated with coping at time 2 (r-.52, p<.001) however, the change in actual growth showed a weak correlation with coping at time 2 (r=.12) suggesting that people merely perceive that they experienced growth as a result of trauma. Frazier et al. (2009) acknowledged however that studies on Post Traumatic growth are not usually performed on undergraduates and that any growth from trauma may not materialise within 8 weeks.

Comparing research on resilience-based growth is challenging. What constitutes 'growth' differs between study and includes behaviours such as stopping drinking (Park, 1998), deeper religious beliefs (Pargament & Park,1995), not taking life for granted (Joseph, Williams & Yule, 1993) and psychological changes such as sense of personal strength and increased spirituality (Tedeschi & Calhoun, 2004; Wortman, 2004). Consequently, the manner in which growth is measured also varies.

Nevertheless, Luthans' broader definition of resilience refers to recovery (or bouncing back) and subsequent progression. There is no reference to the deployment of internal or external personal resources to maintain equilibrium. If being resilient is the ability to manage despite trauma or challenge (Levine et al., 2009) at the point when 'bouncing back' is required, the deployment of personal resources has already failed; resilience has failed. As Bonanno (2004) observes, if someone were able to maintain their resilience, they would have nothing from which to bounce back. Furthermore, if growth was inherent to resilience, every person who exercised resilience would grow from the experience, which does not appear to be the case (Bensimon, 2012; Bonanno, Boerner & Wortman, 2008;

Helgeson, Reynolds & Tomich, 2006; Wortman, 2004). In an 18 year study of resilience in disadvantaged children Egeland, Carlson and Stroufe (1993), found that adverse situations had a cumulative negative effect on competency rather than providing opportunities for growth beyond equilibrium. For the few that did successfully "bounce back" they achieved what society would consider "normal functioning". Given the background of the participants, was this evidence of growth or merely reaching an acceptable level of equilibrium and functioning?

The error proponents of adversity leading to growth might be making is to combine two different motivational mechanisms and labelling them "resilience". The drive to protect ourselves against harm, often triggered by an emotional event, is a defensive motivational system that draws on our resources to return us to homeostasis (Cacioppo, Gardner & Berntson, 1999; Lang, 1995; Lazarus & Folkman, 1987; Zautra & Reich, 2010). Growth derives from an appetite motivational system whereby self-efficacy and reflection enable a greater understanding of one's self. (Cacioppo et al., 1999; Lang, 1995; Richardson, 2002; Tedeschi & Calhoun, 2004; Zautra & Reich, 2010). Resilience and recovery are "discrete and empirically separable" (Bonanno, 2005 p.135). Caza and Milton (2012) support this view, arguing that resilience is the ability to remain competent during adversity but it is afterwards that learning and development takes place.

Recent neuroscience research suggests that learning and growing whilst dealing with adverse situations may be a challenge. The term allostatis (McEwen, 2001, 2016) is used to describe the brains adaptation processes needed to maintain equilibrium in functioning. Increase in allostatic load is the result of repeatedly activating these adaptation processes, for example when experiencing chronic stress. Stress hormones such as cortisol and adrenaline, activated during emotional or adverse events, compromise the effectiveness of the executive functioning of the brain and cognitive function (Girotti et al., 2018). Areas that are needed for learning such as the pre-frontal cortex (PFC) and the hippocampus (Arnsten et al., 2015; Compas, 2006; Kalisch et al., 2019; McEwen, 1995) are deprioritised thereby impairing function. In addition, the increase in cortisol reduces dopamine uptake, an essential neurotransmitter for learning (Hohnen & Murphy, 2016; Willis, 2010). Kloet (2004) found that mice exposed to chronic stress showed reduced spatial learning in response to high cortisone levels.

McEwen (2016) argues that the goal of interventions that build resilience is to mobilise both internal and external resources to enable adaptation and growth. In the context of

resource theories discussed above, those experiencing stressful demands will be deploying their resources to maintain equilibrium. It is therefore, only when the stress diminishes, that resources become available to focus on growth and development (Bakker et al., 2007; Hobfoll, 2002). In the context of VUCA, levels of Psychological Safety may be reduced if ambiguity, uncertainty and unpredictable environments are considered threatening (May et al., 2004). Consequently, employee's psychological resources are being invested in self-preservation and maintaining equilibrium. Conversely, when feeling safe, employees can engage in new experiences and learning without fear or threat (Wanless, 2016b).

Anecdotally, there is support for the notion that having psychological resources leads to resilience (Britt, 2016; Gordon & Coscarelli, 1996; Kumpfer, 2002; Meredith et al., 2011; Park 1998; Ryff & Singer, 2003; Sommer, 2016; Sutcliffe & Vogus, 2003). Which resources are thought to increase resilience varies from Authenticity to Wisdom (see table 2.13). Thus when trying to develop and build resilience, there is little clarity on which psychological resources to focus.

Personal Resources Identified as Key to Resilience	
Mastery, Self Efficacy, Competence	Bandura 1977; Pearlin & Schooler 1978; Thoits 1995; Rini et al 1999; Glantz et al 2002; Sutcliffe & Vogus 2003; Hauser & Allen2007;
Optimism /Positive Outlook	Scheier & Carver 1985; ; Cozzarelli 1993; Carver 1998; Rini et al 1999; Peterson 2000; Chang & Sanna 2001; Luthans 2002; Gillespie Chaboyer & Wallis 2007a, 2007b ; Bakker & Schafeli 2008; Carver & Scheier 2010
Planning	Rutter 2012; Masten, Burt, Roisman, Obradovic, Long, & Tellegen 2004
Control	Maier & Seligman 1976; Kobasa 1979; Taylor 1983; Cozzarelli 1993; Judge, Bono, Erez & Locke 2005
Self-Esteem	Taylor 1983; Cozzarelli 1993; Thoits 1995; Rini et al 1999; Stajkovic 2006)
Creativity & Wisdom	Seligman & Csikszentmihalyi 2000; Luthans &Yousef 2007
Humour	Carver, Pozo, Harris, Noriega, Scheier, Robinson et al 1993; Seligman & Csikszentmihalyi 2000; Luthans & Yousef 2007
Authenticity	Luthans & Yousef et al 2007
Emotional Intelligence	Seligman & Csikszentmihalyi 2000; Luthans & Yousef 2007
Self-enhancement	Bonanno 2004
Personal agency	Glantz 2002; Hauser & Allen 2207
Courage	Luthans & Yousef 2007
Values/Belief Systems	Coutu 2002; Masten et al 2012
Social Support Network	Kobasa 1979; Taylor 1983; Schieir & Carver 1985; Wagnild & Young 1993; Holahan; Werner 1995; Moos et al 1999 ; Peterson 2000; Luthans 2002; Sutcliffe &Vogus 2003; Hobfoll, Johnson et al 2003; Masten et al 2004; Stajkovic 2006; Hauser & Allen 2007; Gillespie et al 2007; Luthans & Youseff 2007; Carver & Scheier 2010; Rutter 2012
Meaningfulness	Kobasa 1979; Taylor 1983; Brandtstadter & Renner 1990; Heckhausen &Schultz 1995

Table 2.13 Summary of psychological resources identified as resulting in resilience.

It would be of particular interest to determine the personal resources that are key to resilience in today's workplace. However, despite considerable past research on resilience, there has been less research into resilience in the context of today's organisations (King, Newman & Luthans, 2016). Studies of resilience in the workplace have primarily researched extrinsic resources such as support and feedback (Kuntz, Connell, & Naswall, 2017), supportive leadership and co-worker support (Cooke, Wang & Bartram, 2019), organisational inducements and social exchange (Shin et al., 2012) and leadership styles (Nguyen et al., 2016). These give no insight into the intrinsic psychological resources that lead to resilience.

The Healthcare industry appear to be the pioneers in understanding how employee resilience is created. Gevaux & Petty (2018) used a card sorting exercise to identify the resources that 25 healthcare professionals felt were the most helpful/unhelpful and abundant/scarce resources available to aid with their resilience. The identified resources were categorised into organisational resources (tangible and cultural), personal resources such as positive ways of working, outlook or attitudes, coping strategies and tangible resources (e.g. sleep, massages, alcohol). The most helpful and available resources identified for resilience were personal outlooks and attitudes (keeping an open mind; humour) and positive ways of working (building on personal experience and expertise; maintaining sense of control over work responsibilities). A potential limitation of this study might be the technique of card sorting. Cards were provided with resource options gathered from a focus group. Therefore only those identified resources are sorted. There may have been other resources not represented on the cards. Furthermore, card sorting has been criticised as providing "anecdotal" evidence (Wood & Wood, 2008, p.5).

In their concept analysis of resilience, Gillespie et al. (2007b) studied 50 papers from a 30 year period. They identified three defining attributes of resilience: self-efficacy, hope and coping. Coping they defined as Lazarus and Folkman's (1987) problem-focused coping; the process of reappraising the situation in such a way that adjustment can occur and emotions regulated.

Gillespie et al. (2007a) in their work to understand the attributes of resilience in theatre nurses, tested three resource constructs: belief that the goal can be attained (hope); self-efficacy and coping, hypothesising them to be antecedents to resilience. Seven hundred and seventy-two nurses completed a questionnaire measuring twelve variables (see table 2.14).

Workplace Culture	Competence	Perceived Competence Scale (Chao et al 1994)
	Socialisation	Performance Proficiency (Chao et al 1994)
	Socialisation	Language Scales- (Chao et al 1994)
	Collaboration	Collaboration with Medical Staff (Adams et al 1995)
	Collaboration	Cohesion Amount Nurses Scale (Adams et al 1995)
	Collaboration	Peer Support Scale (devised for study)
	Control	Managing Stressful Situations Scale (devised for study)
Self-Efficacy		General Self –Efficacy Scale (Schwarzer & Jerusalem (1995)
Hope		Adult Dispositional Hope Scale (Snyder, 2000) : Will & Way subscales
Ways of Coping		Plannful Problem Solving from Ways of Coping Scale (Lazarus & Folkman (1984)
Resilience		Connor-Davidson Resilience Scale (2003)

Table 2.14 Tests for attributes of resilience (Gillespie et al., 2002a).

Regression analysis indicated that the independent variables accounted for 58% of the variance in resilience. However, it was hope and self-efficacy that had the strongest relationship with resilience.

> When designing and implementing training to develop Psychological Capital, Luthans acknowledges that resilience is developed through the building of "personal assets" (2010 p. 66). These assets he describes as the "development of several pathways to accomplish the goal" (hope), "increasing [the participants] efficacy to accomplish the goal" (self-efficacy) and "increasing positive expectations of goal accomplishment" (optimism) (p.52). These are defined as the strengths or "psychological capacities" needed for performance (Luthans & Church, 2002 p.59). Psychological capacities are defined as "an accessible psychological resource that contributes to the achievement of adaptive intrapsychic and interpersonal functioning" (Zilberg et al., 1991, p.321). In other words, these are cognitive resources that allow us to adapt and function, a definition that parallels resilience.

The POB criteria, required the four components of Psychological Capital: Hope, Optimism, Self-Efficacy and Resilience, to be state like and therefore "develop-able". In fact, Luthans at al. (2007) argue that they are both trait like *and* state like. Not as "hard-wired" as personality traits, but also not so state-like that they are transient, such as moods or emotions (Youssef-Morgan et al., 2015) (see figure 2.2). For example, Snyder et al., have developed both state (1991) and trait hope scales (1996), recognising that people have both a dispositional hope as well as a state hope that reflects current circumstances. The creation of the state hope scale has allowed a measurement of an individual's current goal-directed thinking *in a particular context* (Snyder et al., 1996). State self-efficacy refers to an individual's beliefs about their abilities to perform *a specific task* (Stajkovic & Luthans, 1998b). Being a state-like domain enables the development and management of Psychological Capital components within a context, in this case the workplace (Luthans & Church, 2002; Youssef-Morgan & Luthans, 2015).

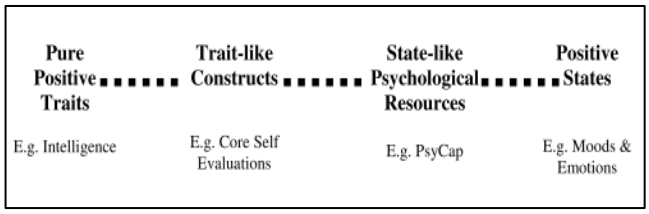


Figure 2.2 The Trait-State Continuum as Proposed by Luthans and Youssef (2007) in Dawkins and Martin (2013, p.18)

Thus Luthans and colleagues identified four apparently unique yet associated state-like resources (Avey et al., 2011) which, when combined, create the higher order construct of Psychological Capital (Luthans, 2002; Luthans & Youssef, 2004; Luthans, Youssef, & Avolio, 2007). This they defined as…

> "an individual's positive psychological state of development that is characterized by: (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals

(hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resiliency) to attain success" (Luthans et al., 2007a, p.3).

The next section will explore the research into establishing the four resources as unique and the subsequent validation of Psychological Capital as a higher order construct.

2.3 Validation of the Psychological Capital Model

Early investigations into Hope, Self-Efficacy and Optimism as predictors of general wellbeing were carried out by Magaletta and Oliver (1999) using the same measures as Luthans later used in his Psychological Capital Questionnaire (PCQ). These were: the Life Orientation Test (LOT) to assess Optimism (Scheier & Carver, 1985), the Adult Hope Scale (AHS) to test Hope (Snyder et al., 1991) and the Self-Efficacy Scale (SES) to test Self-Efficacy (Sherer et al., 1982). Measures were administered to 204 psychology students between the ages of 17 – 50 years old, 97% of whom were under the age of 25. A Maximum likelihood factor analysis was performed specifying the SES, the LOT and the two components of Hope: Agency and Pathways. The resulting four factor solution demonstrated that Self-Efficacy, Optimism and the Pathways component of Hope each loaded onto the first three factors. The Agency component of hope loaded onto the fourth factor along with three Self-Efficacy questions. It was concluded that hope, optimism and self-efficacy were "related but not identical contrasts" (1999, p.548).

Carifo & Rhodes (2002) found similar results in their small study of students at risk (N=78). The study aimed to determine the relationships between optimism (LOT), hope (AHS), self-efficacy (Academic Self-Efficacy Scale: Owen & Froman, 1988) and locus of control (Multi-dimensional-Multi-attributional Causality Scale, MMCS: Lefcourt et al., 1979). They concluded that LOT and AHS measured independent yet complimentary constructs. The four subcomponents of Locus of control; self-confidence, effort, ability and luck showed little or no correlation with Hope, Optimism or Self-efficacy (see table 2.15). Bryant and Cvengros (2004) confirmed the findings of

	Locus of Control				Hope			
	Self-Confidence	Effort	Ability	Luck	Hope-Agency	Hope-Pathways	Optimism	Self-Efficacy
Self Confidence	1.0	.04	-0.34*	-0.36*	-0.04	-0.01	0.04	-0.27*
Effort		1.0	0.11	0.15	0.13	0.09	-0.13	-0.01
Ability			1.0	0.58	0.00	0.03	0.02	0.04
Luck				1.0	-0.05	0.04	0.00	-0.13
Hope-Agency					1.0	0.46*	0.52*	0.35*
Hope-Pathways						1.0	0.13	0.08
Optimism							1.0	0.26*

*P<.01

Carifo and Rhodes, 2002 pp 133

Table 2.15 Correlations between Components of Locus of Control, Hope, Optimism and Self-efficacy (Carfio & Rhodes, 2002 p.133)

Carifio and Rhodes (2002) in their research to determine whether Hope (AHS) and Optimism (LOT) were separate constructs or whether they reflected the same underlying trait. Undergraduate psychology students (N=351) from two universities completed the questionnaires anonymously. A Confirmatory Factor Analysis supported Snyder et al.'s (1991) theory that Hope consists of two dimensions: Agency and Pathways, and that Optimism also consisted of two dimensions: positively framed optimism and negatively framed pessimism (Dember et al., 1989a, 1989b) with a four factor model (Agency, Pathways, Optimism and Pessimism) providing a stronger fit than a unidimensional model. This suggests that although related, Hope and Optimism are separate constructs. Using the same participants, Bryant et al. (2004) tested whether Hope (AHS), Optimism (LOT) and Self-Efficacy (Self-Efficacy Scale: Sherer et al., 1992) are interchangeable concepts. The strongest model fit was a three-factor model, suggesting that Self-Efficacy is a separate construct from Hope and Optimism. It should be noted that the optimism and hope scales used in these studies were dispositional – testing trait rather than state.

Thus there is research to suggest that Hope, Optimism and self-efficacy are separate, although related, constructs. However, this is contrary to the findings of Cozzarelli (1993) who researched self-efficacy in the adjustment of 291 women undergoing abortions. Measures were made of self-efficacy (using a self-efficacy scale for use with abortion studies: Major et al., 1985) optimism (LOT), self-esteem (Rosenberg Self-Esteem Scale, 1965), chronic perceptions of control (Self-Mastery Scale: Pearlin & Schooler, 1981) and depression (Centre for Epidemiological Studies – Depression Subscale (CES-D): Radloff, 1977). The measures of self-esteem, optimism and control were highly correlated. Furthermore, each variable accounted for no more than 20% of the variance in self-efficacy but all three variables together accounted for 27%. This led Cozzarelli to conclude that optimism, self-esteem and control were similar constructs. However, as the measures used in this study were different to those used by Carifo and Rhodes (2002), it is difficult to compare results.

Luthans et al. (2007a) concurred that although the four factors of Hope, Optimism, Self-Efficacy and Resilience are individual components in themselves, there are relationships between them; for instance, individuals with high self-efficacy demonstrated greater resilience (Bandura, 1997), and individuals with high hope showed more self-efficacy and resilience (Snyder et al., 1991). It was hypothesised that together the variables create a higher order factor of Psychological Capital.

To test this hypothesis, Luthans et al. (2007a) used an online survey with four samples: sample 1: 167 management students (average age 22.5 years, SD=1.41), sample 2: 404 management students from a different university (average age 21.10 years, SD=2.66); sample 3: 115 engineers and technicians of average age 44.83 (SD=7.31 and sample 4: 144 employees of an insurance services firm, average age

33.79 (SD=10.85). The measures used were Snyder's State Hope scale (1996), LOT, Parker's Self-Efficacy scale (1998) and Wagnild and Young's (1993) Resilience scale. To ensure each variable had equal weight, the best 6 items from each of the measures were selected by a research group (Luthans email, 2017) and reworded to ensure they were state-like and workplace relevant. Each measure had a 6 point Likert-type scale (strongly disagree – strongly agree). This formed the Psychological Capital Questionnaire (PCQ: See Appendix E). Cronbach alphas for each adapted measure across the four samples were: hope .72, .75, .80, .76; optimism .74, .69, .76, .79; self-efficacy .75, .84, .85, .75 and resilience .71, .71, .66, .72. For the entire Psychological Capital questionnaire alphas were .88, .89, .89, and .89 which Luthans et al. felt mitigated the poor results for optimism and resilience in their second and third samples.

A Confirmatory Factor Analysis (CFA) using maximum likelihood estimation was performed on the student and employee data separately. One, three and four factor models were tested (see table 2.16). The four-factor model demonstrated the strongest fit. This suggested that the four variables of hope, optimism, self-efficacy and resilience together formed the higher order model of Psychological Capital.

Three Factor CFA Models tested		
Factor 1	**Factor 2**	**Factor3**
Hope + Resilience	Optimism	Efficacy
Hope + Optimism	Efficacy	Resilience
Optimism + Resilience	Efficacy	Hope

Table 2.16 The Three Factor CFA Models tested by Luthans et al., 2007a p559

However, the model for Self-Efficacy + Resilience, Optimism and Hope was omitted from the three factor models tested. Given the literature concerning the relationship between self-efficacy and resilience, this omission is surprising.

The statistical reliability of Psychological Capital as a construct has been challenged. Studies by other researchers on Psychological Capital show less positive results. For instance, a large South African study by which surveyed 1749 participants found that the Cronbach alpha value for optimism was a low (Grobler & Joubert, 2018). This the researchers attributed to the two reverse scoring items in the optimism scale. Additionally, a CFA using the four components of Psychological Capital did not demonstrate a conclusively strong model fit.

Similarly, Lorenz et al. (2016) found that when testing the Psychological Capital model, their CFA results also fell short of the acceptable levels, finding that instead their own trait based Compound Psychological Capital Scale produced a better fit. However, Lorenz et al. deviated from Luthan's Psychological Capital model by using different measures for self-efficacy and resilience.

The self-report nature of the PCQ has been criticised on the basis of the risk of common method variance (CMV) and social desirability response bias (Dawkins & Martin, 2013; Hackman, 2009; Newman et al., 2014). Clearly, the same criticism could be levelled at other self-report measures: it is a common limitation of many research studies. To address this, increasingly, research using the PCQ involves reports from "others" such as team colleagues, managers and subordinates (Avey, Wernsing & Luthans, 2008; Hmieleski & Carr, 2007; Petersen & Youssef-Morgan, 2018) or longitudinal studies (Luthans et al., 2010; 2013).

Luthans and Church designed the Psychological Capital model to represent "human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today's workplace" (2002 p.59). However, today's workplace has changed, and this has altered the demands on employees. Perhaps then the psychological capacities needed to maintain performance have changed too. One such capacity that may be essential today is cognitive flexibility.

2.4 Cognitive Flexibility

The rapid and IT driven change that organisational environments are exposed to (Haskel & Martin, 2001; Schuler et al., 2011) require new competencies (Hobfoll 2002; Kark & Carmeli 2009; Rich, 2010). Employees need to be able to adapt and innovate at speeds that confound the competition (Pulakos et al., 2000; Ryff & Singer, 2003, Collins & Smith 2006). Creative behaviours are "essential for addressing new and changing demands in the workplace" (Kark & Carmeli 2009 p.787) in addition to the ability to create, analyse and transform information (Greenspan 1997 p.4). If the Psychological Capital model aims to represent the "psychological capacities" (Luthans & Church 2002 p.59) needed for workplace performance, then perhaps these new capabilities should be reflected. It seems that to be resilient in an ever-changing environment employee adaptation is key; the ability to change one's mental paradigm to embrace, rather than resist, change. Resources such as control, hardiness, open-mindedness, learning orientation, and curiosity (Kobasa, 1979; Good, 2009; Lepine, Colquitt & Erez 2000; van Dam, 2013; Navarro, Newell & Schulze, 2016) have been cited as key personal resources for adaptation. However, a key resource proposed to enable performance in today's environment is cognitive flexibility. This section will firstly define what is meant by cognitive flexibility, then explore the research findings relevant to VUCA environments and finally, its potential role as part of the Psychological Capital model.

2.4.1 Defining Cognitive Flexibility

Definitions of cognitive flexibility, fluid cognitive ability and cognitive agility refer to the ability to change thinking in order to adapt (see table 2.17).

The cognitive agility model was developed by Good (2009) to support real time fast-changing environments in which adaptive and dynamic decision making was required; a context in which change, novelty and ambiguity and complexity were prevalent (Brehmer, 1992; Good, 2009). In later works he refers to this as "ambidexterity" (Good & Michel, 2013). While this model refers to the components of cognitive flexibility, it has chosen to use the term "cognitive agility"; drawing from the definition of agility: to move quickly or think quickly and easily.

Term	Definition	References
Cognitive Agility	Cognitive agility is specific cognitive ability that leads to increased performance in a context that requires a series of individual adaptations. – the ability to flexibly operate with cognitive openness and focused attention	Good 2009
	The individual capacity to mindfully practice openness and focus, as a skill to meet the demands of adaptation	Good & Yeganeh 2012
Cognitive Flexibility	To the ability to shift avenues of thought and action in order to perceive, process and respond to situations in different ways	Eslinger 1993
	Cognitive flexibility refers to a person's (a) awareness that in any given situation there are options and alternatives available, (b) willingness to be flexible and adapt to the situation, and (c) self-efficacy in being flexible.	Martin & Rubin 1995
	Is an executive function that supports successful adjustment through its underlying components of cognitive control and set shifting	Clark, 1996
	A person's awareness of communication alternatives, willingness to adapt to the situations and self-efficacy in being flexible	Martin & Anderson, 1998
	The ability to cognitively control and shift mental set	Canas, et al 2003,
	Flexible cognition entails the dynamic activation and modification of cognitive processes in response to changing task demands	Deak 2003 pp 275
	Generally speaking, the ability to switch cognitive sets to adapt to changing environmental stimuli appears to be the core component for most operational definitions of cognitive flexibility	Dennis & Vander Wal 2010
	Important characteristic that helps humans pursue complex tasks, such as multitasking and finding novel, adaptable solutions to changing demands. –	Ionescu 2012
	The readiness with which one can selectively switch between mental processes to generate appropriate behavioral responses,	(Collins and Koechlin, 2012) in Chen et al 2014
	Reflects the adaptability of thought and behavior	Dajani & Uddin, 2015
Fluid Cognitive Ability (FCA)	The ability to process and integrate information, act, and solve novel problems	Stawski et al 2010

Table 2.17 Summary of Definitions of Cognitive Agility, Cognitive Flexibility and Fluid Cognitive Ability

Despite Good's choice to use the term agility, for the purpose of this dissertation, the term cognitive flexibility will be used for three reasons. Firstly in recent times the term agile has been adopted by the Project Management community, particularly in the context of software and digital

transformation. Secondly, the cognitive flexibility model refers to two components, each of which are defined as types of flexibility, specifically reactive flexibility and spontaneous flexibility, thus is seems appropriate to refer to cognitive flexibility. Finally, it is possible that cognitive agility is the consequence of cognitive flexibility.

Before investigating the role that cognitive flexibility may play in Psychological Capital, each of these types of cognitive flexibility will be explored.

2.4.2 Reactive Flexibility

Reactive Cognitive flexibility refers to an individual's willingness and capability to change their focus of attention and consciously choose behaviours rather than just responding habitually (Eslinger & Grattan, 1993; Shipstead, Harrison & Engle, 2016).

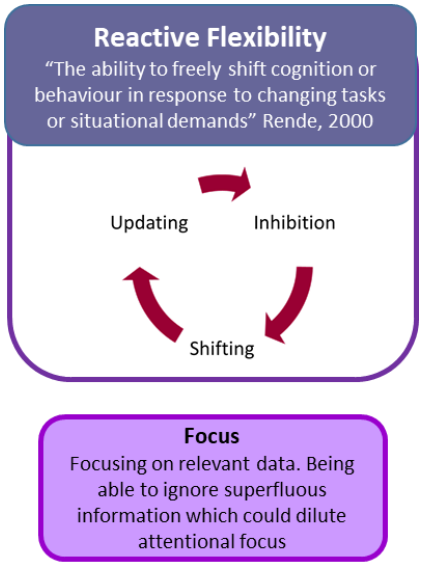


Figure 2.3 Diagram illustrating the process of reactive flexibility as described by Miyake et al., (2000), DeMeuse (2010), Rende (2000) and Schmitt et al., (2011),

To achieve this, having identified a need to change, individuals need to firstly inhibit any previously learnt responses or reactions (Schmitt, Borzillo & Probst, 2011). A second process requires shifting attention to the relevant tasks or demands (Miyake et al., 2000) and finally a process of unlearning needs to take place; discarding old irrelevant information and retaining the new relevant information (De Meuse, 2010; Dajani & Uddin, 2015; Schmitt et al., 2011: see figure 2.3) In doing so, individuals can channel their focus and control priorities (Posner, 1980). Of course there is a risk here of throwing the baby out with the bath water by assuming that new learning is better than old knowledge (Brook et al., 2016). However if one adopts Antonacopoulou's (2009) perspective that unlearning is a process of "asking new questions that embrace the unknown" (p.428) then this will enable employees to identify difference, manage responses and recognise the need to adapt and shift attention as needed (Van Dam, 2013).

However, in itself, recognising there is a need to focus elsewhere or adapt is meaningless (Ionescu, 2012). Having recognised a need to inhibit habitual thinking and do something different, the employee now needs to generate new solutions using uninhibited thinking. Research by Star and Seifert (2006) on the flexible solver (flexible problem solving) is particularly relevant for VUCA environment. It refers to being able to identify both many and diverse solutions to new problems

(Eslinger et al., 1993; Ionescu, 2012; Rende, 2000; Star & Siefert, 2006). This requires Spontaneous Flexibility.

2.4.3 Spontaneous Flexibility

Where reactive flexibility enables focus, spontaneous flexibility enables the reinterpretation of information in a new "mental context" to create multiple and diverse solutions (Shipstead et al., 2016 p.784). Good (2009) refers to this as Cognitive Openness (see figure 2.4).

2.4.3.1 Cognitive Openness

Openness is usually associated with the Big Five personality trait Openness to Experience (Costa & McCrae, 1995), which itself is described in many ways; as intellect (Fiske,1949), the need for variety (Maddi & Berne, 1964), absorption (Tellegen & Aitkinson, 1974), sensation seeking (Zuckerman, 1984), intellectance [sic] (Hogan, 1986) and culture (Tupes & Christal, 1992). Consequently Good (2009) seeks to differentiate the personality trait of Openness to Experience from the construct of Cognitive Openness. Defined as the process of "gathering new information" (2009, p.14), cognitive openness requires firstly a "wide breadth of perceptual attention" (2009, p.15) to ensure data or stimuli are not overlooked (Mendelsohn, 1976). Secondly it involves conceptual attention, i.e. a willingness to follow new threads of data (Good, 2009 p.15). These, Good argues, require creativity and curiosity, underpinned by divergent thinking.

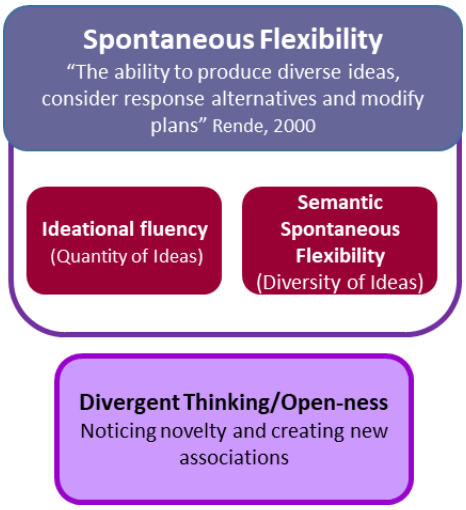


Figure 2.4 Diagram illustrating the process of spontaneous flexibility as described by Good (2009) and Rende (2000)

2.4.3.2 Divergent Thinking

Divergent thinking is defined as the ability to generate multiple novel problem solutions or ideas (Guilford, 1950; Parkhurst, 1999; Wallach & Kogan, 1965). Similarly, creativity is defined as the ability to produce novel and appropriate solutions to problems (Amabile, 1982; Benedek et al., 2014; Guilford, 1950). These two processes have been associated with each other (Baer, 1996; McCrae, 1987; Scratchley & Hakstian, 2001; Wallach & Kogan, 1965).

Research in schoolchildren suggests that divergent thinking involves cognitive processes that can lead to creativity (Wallace & Kogan, 1965). For instance, Plucker (1999) used structural equation modelling to reanalyse data from Torrance's (1992) elementary school longitudinal study. Measures of divergent thinking and intelligence in children were used to predict their creative achievement as adults. Results showed that the path co-efficient from divergent thinking to creative achievement was three times larger than from intelligence. However, in a similar study developing creativity in 157 12 year old school children, the divergent thinking tasks did increase creativity, but only in the tasks relevant to the divergent thinking training, in this case, poetry writing (Baer, 1996).

The rationale that divergent thinking is synonymous with creativity remains controversial (Kim et al., 2008). It has been suggested that creativity is made up of both divergent thinking and convergent thinking (Guilford, 1950; Nusbaum & Silvia, 2011). Indeed, the creative process is considered to be a result of attentional control; executive functions managing interference (Nusbaum et al., 2011). Gillhooly et al. (2007) in research with 102 students, two groups performed the Alternative Uses test; a silent group and a "thinking aloud" group. The outputs from each group were broadly similar. Analysis of the "thinking aloud" group, demonstrated that fluency (quantity) of output was determined by memory while novelty was determined by the strategy of disassembly (disassembling the item and reusing or recombining parts). This suggested that the process of creativity began with early memory recollection and only once automatic retrievals were exhausted did participants switch to novelty producing strategies. As such, those with greater executive capacity produced more "new" ideas.

Vincent, Decker, & Mumford, (2002) used structural modelling to determine the relationship between divergent thinking, intelligence, expertise, idea generation and idea implementation (N=110). In their final model, intelligence and expertise contributed to divergent thinking. In turn, both divergent thinking and expertise contributed to idea-generation. This suggests that rather than being synonymous with creativity, divergent thinking represents one aspect of creativity. One interpretation of these analyses is that divergent thinking indicates a potential for originality, a key, but not unitary component of creativity (Cropley, 2000; Runco & Acar, 2012).

It should be noted that many of the tests used to assess test creativity are also used for divergent thinking (Cropley, 2000; Runco & Acar, 2012; Silva, Martin & Nausbaum, 2009). The measures often relying on subjective views of creativity.

Creativity was rejected by Luthans et al. (2007b), as a possible component of Psychological Capital since it was deemed an outcome of the integration of multiple constructs and therefore difficult to define and measure; a criterion for Psychological Capital inclusion. The process of divergent thinking may lead to novel ideas but not necessarily translate into creative behaviour (Guilford 1950; Cropley 2000; Runco & Acar, 2012. This would therefore fail to meet the criteria of providing "tangible results and quantifiable performance outcomes" (Youssef-Morgan, 2014 p.132).

Cognitive openness also requires an attitude of curiosity in that the individual is open to and seeks new information and novelty (Bishop, et al., 2004; Bodner, 2000; Langer, 1989; Pirson et al., 2012; Sternberg, 2000). Curiosity leads to broader "environmental scanning" (Weick & Sutcliffe, 2006 p.516) expanding information searches to beyond known data to that which is new. In turn this can lead to the development of multiple perspectives resulting in diverse solutions and alternatives (Fiol & O'Connor, 2003; Good, 2009; Langer & Moldoveanu, 2000; Runco & Acar, 2012). In the context of cognitive flexibility, openness does not refer to a personality dimension, but a way of thinking that encompasses novelty and curiosity.

2.4.3.3 Attentional Control

Together, reactive and spontaneous flexibility form Cognitive Flexibility (see figure 2.5), whereby individuals are able to, on the one hand, exercise purposeful attentional control, focusing on the relevant and specific stimuli whilst on the other maintaining a broad span of attention to be open to new information and novelty. Together these abilities enable the generation of relevant and novel solutions. However, in environments perceived as challenging, exercising such attentional control may not be easy.

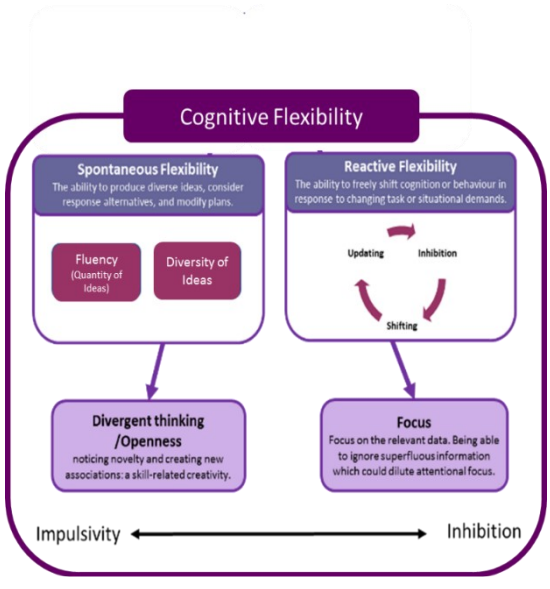


Figure 2.5 Diagram illustrating the relationship between Spontaneous and Reactive Flexibility and their components as described by Good (2009) and Rende (2000)

Early theories as to why this is derive from the premise that humans have two core motivations; the first is a defensive system to minimise threats, the second an appetitive system to maximize reward (Bradley, 2009; Cacioppo, Gardner & Bernston, 1999; Lang,

1995; Rock, 2008). Research suggests that we are hard-wired to place greater attention on threat stimuli as a survival mechanism (Derryberry & Reed, 2002b; Öhman, 2007; Rock, 2008). This attentional bias (AB) has been researched primarily in the context of mental health issues such as anxiety, PTSD and depression (Bar-Haim et al., 2007; Bar-Haim et al., 2010; Broomfield & Turpin, 2005; Derryberry & Reed, 2002b; Eysenck et al., 2007). Bar-Haim et al., (2007) performed a meta-analysis of 172 studies of attentional bias to threat and anxiety. Across all studies, the combined effect size of threat-related bias, measured using the emotional Stroop, probe detection (or dot-probe) task, or a version of the emotional spatial cuing task was significant in anxious participants but not in non-anxious participants. A later study by Bar-Haim et al. (2010) with 131 Israeli's living within rocket range of the Gaza strip, assessed threat bias using a dot probe task and situational stress, measured as time to seek shelter in the event of a rocket attack. Results showed that situational stress increased attentional bias.

However, recently, this premise has been questioned. The attentional bias to threat has been shown to diminish when cognitive resources are being deployed on goal relevant tasks (Pessoa et al., 2002; Vogt et al., 2013; Yates, Ashwin & Fox, 2010). In one study to test the effect of stimuli on aversive and appetitive attention a loud noise was used as the unpleasant outcome and a money reward as the pleasant outcome (Austin & Duka, 2010). Student's attention was measured using eye tracking. Results showed a main effect of stimulus with attentional bias being greater for pleasant stimuli compared with unpleasant stimuli. Similarly, Vogt et al. (2013) demonstrated that attention was deployed to pictures that were relevant to a goal rather than to pictures that were threatening or neutral. This finding was replicated in both non-anxious participants and those high in trait anxiety, as measured by the State and Trait Anxiety Inventory (Spielberger et al., 1983).

Although these studies were small they do suggest that in focusing cognitive resource capacity on goal achievement, the tendency to become distracted by threat responses reduced, unless the threat was relevant to the task-goal (Hahn & Gronlund, 2007; Stein et al., 2009). This was even the case in high-anxiety individuals (Vogt et al., 2013). Furthermore, Peers and Lawrence (2009), used neutral or threatening affective stimuli finding that individuals with high attentional control were able to regulate their attentional responses and so did not demonstrate attentional bias to threat. However a closer look at the sample size and effect were small.

Although these findings are weak, they support those of Derryberry et al. (2002b): individuals with the ability to overcome an automatic attentional response in favour of a considered response are less biased towards negative events thereby creating resilience. Genet and Siemer (2011) tested 59 students to measure the relationship between cognitive flexibility, as measured by a task switching exercise, and resilience. A regression analysis suggested that cognitive flexibility significantly predicted resilience scores.

Although it could be argued that the "threats" of angry faces or loud noises in these experiments are not comparable with the threat of job changes or job loss, they do suggest that individuals are able to focus on goal achievement rather than threat. Attentional control involves both automatic (bottom up) and controlled (top down) cognitive processes which enable attention to be shifted and focused as required. Doing so may enable the management of attentional bias to perceived threat. Good (2009) suggests that the successful attentional control that comes from reactive and spontaneous flexibility could be what has now been popularised as mindfulness.

2.4.3.4 Mindfulness

There are multiple definitions of mindfulness and for each there are both protagonists and opponents. The aim here is not to debate these but rather to define mindfulness in the context of cognitive flexibility as defined above. There are two elements upon which researchers agree. The first is that mindfulness, in any model, involves purposeful attentional control or regulation (Langer & Moldoveanu, 2000; Sternberg, 2000; Bishop et al., 2004; Wieck & Sutcliffe, 2006; Brown, Ryan & Cresswell, 2007; Evans, Baer, & Segerstrom, 2009; Pirson et al., 2012). In a study to test the impact of mindfulness training on attentional control, 40 participants attended a 10 day meditation course. Half of these received additional mindfulness training (Chambers, Lo & Allen, 2008). Each group was tested before and 7-10 days after course completion. Measures included the self-report Mindfulness Attention Awareness Scale (MAAS- Brown & Ryan, 2003) and an Internal Switching Task designed to test reaction time, attention and switching effects. The mindfulness group showed improved performance on the MAAS and internal switching task. This mirrored the findings of Jha, Krompinger and Baime (2007) who compared three groups: one attending an 8 week mindfulness training (N=17), a group attending a month's meditation retreat and a control group (N=17). Attentional control was measured before and after events using the Attention Network Test (Fan et al., 2002). Results showed that the mindfulness training group improved their voluntary attentional selection. However, a

similar study of an 8 week Mindfulness Based Stress Reduction program, although demonstrating an increase in self-reported mindfulness and wellbeing failed to demonstrate any changes in attentional control relative to the control group (Anderson, et al., 2007). Of course one of the challenges with Mindfulness is the nature of the measures which are based on self-report.

The second element upon which researchers agree is that mindfulness requires curiosity in that the individual is open to new information and novelty (Langer, 1989; Sternberg, 2000; Bodner, 2000; Bishop et al., 2004; Pirson et al., 2012). Theories of Western based mindfulness relate to conscious "information processing" (Krieger, 2005 p.137), learning to "switch modes of thinking", noticing new things and disrupting routines (Weick & Sutcliffe, 2006 p.516). Langer (1989) refers to this as not being "mindless" (p.7), Wenk-Sormaz (2005) as "deautomatization" [sic] of habitual responses (p.43).

Levinthal & Rerup (2006) point out that mindfulness is about being able to respond "to diverse, changing stimuli" resulting in the "conversion of experience into reconfigurations as assumptions, frameworks and actions" (p.505, p.507). This requires the ability to be engaged sufficiently with your environment to notice changes, to be able to produce new and novel solutions through exploration (Langer, 1989; Yeganeh, 2006) rather than merely exploiting existing sources of knowledge or experience.

2.4.4 Cognitive Flexibility and VUCA

In the context of the VUCA organisation, the drive to explore the new is key to being able to enable innovation and adaptation for the future (Laureiro-Martínez, Brusoni, & Zollo, 2010; O'Reilly III & Tushman, 2011). To do so will require openness and divergent thinking (spontaneous flexibility). However, concurrently, leaders also need to exploit existing (usually limited) resources to maximise efficiency (reactive flexibility). In doing so, leaders are able to "shift avenues of thought and action in order to perceive, process, or respond to situations in different ways" (Eslinger & Grattan, 1993 p.17). Thus cognitive flexibility has been associated with individual adaptability (Ionescu, 2012; O'Reilly 2013; Stawski et al., 2010).

Good (2009) developed an online game "Network Fire Chief" (NFC) to test dynamic adaptive performance. Participants (N=181 undergraduates) in a study by Good and Michel (2013) were ask to put out online fires using the resources they had. Fire location and resources changed throughout the game, requiring individuals to adapt their performance and strategy. Cognitive agility was measured using the Alternative Uses test (for a brick or a paper clip) to test divergent thinking, the

Go/No go paradigm to test focused attention (McClure, Gilzenrat & Cohen, 2005), crystallised and fluid intelligence as measured by a vocabulary test and card rotations test respectively and finally the Stroop test to measure cognitive flexibility. Divergent thinking, focused attention and cognitive flexibility all correlated positively with adaptive performance. Regression analysis using Adaptive performance as the dependant variable indicated that measures Divergent Thinking explained 3.0% and Cognitive flexibility showed 6.0% unique variance over and above the measures of intelligence. The findings suggest that although intelligence was the largest predictor of adaptive performance, cognitive flexibility also contributed.

Good & Michel's (2013) study found that focused attention accounted for 2% of the variance in adaptive performance. The self-regulatory processes of cognitive flexibility, such as inhibiting and refocusing attention has been cited as necessary to enable performance related behaviour change (Ferris et al., 2011; Vohs et al., 2008). In a large adult study by Stawski et al. (2010) participants who had taken part in a health and well-being survey in the US kept a daily diary of positive and negative moods for 8 days. Fluid Cognitive Ability (FCA) was assessed using the Brief Test of Adult Cognition by Telephone (BTACT, Lachman & Tun, 2008) which measures key fluid cognitive domains including episodic verbal memory, working memory span and executive function, reasoning, and speed of processing. Results indicated that not only are individuals with higher levels of fluid cognitive ability more likely to report experiencing daily stressors but also the days on which they reported stressors were characterized by greater numbers of stressors than individuals with lower ability. However, despite this, high fluid cognitive ability moderated any negative mood. Stawski et al., (2010) posited that this may be due to those with high fluid cognitive ability being willing and/or able to take on more at work, thereby increasing the number of stressors. However their cognitive ability enabled them to manage any emotional response to these. This is supported by the results of a longitudinal study of 101 undergraduates that demonstrated successful adaptation was linked to emotional flexibility (Bonnano et al., 2004) Emotional flexibility accounted for 7% of the variance in distress at time 2. Other studies have also suggested that emotions can be controlled by exercising cognitive flexibility (Genet & Siemer, 2011; Pulakos et al., 2002).

The ability to exercise cognitive control and deal with stressors is what is thought to stop the threat response from compromising adaptability (Monsell, Sumner & Waters, 2003). Environments whereby problems are new or ill-defined and existing knowledge needs to be reappraised, cognitive flexibility may be of an advantage (Davis, Eisenhardt & Bingham, 2009; Good, 2009; Good & Michel, 2013). Therefore, perhaps given today's organisations, cognitive flexibility should be considered as one of the psychological resources necessary for performance.

2.4.5 Cognitive Flexibility – Meeting the POB Criteria

To be included in the Psychological Capital model, Cognitive Flexibility will need to meet the POB criteria in that it must reflect a positive state, be grounded in theory, state like (develop-able) and be work related. This section looks at each of the three aspects of cognitive flexibility: attentional control, divergent thinking and mindfulness in the context of the POB criteria.

2.4.5.1 Attentional Control

As discussed above, the ability to control ones attention has been shown to help manage emotion (Derryberry et al., 2002b; Stawski et al., 2010) and anxiety (see Appendix G for a summary of studies of attentional control on anxiety). Although Derryberry & Reed (2002b) posit that there is a "general personality dimension representing sensitivity to threat" (p.232), training interventions on attentional control have shown to be beneficial for anxiety training. Gillham et al., (2007) carried out a longitudinal study to assess the impact of six 90 minute cognitive behavioural training sessions on depression and anxiety for 22 children, a further 22 children were the control group. All children were tested with the Children's Depression Inventory (CDI: Kovacs, 2001)and the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond,1985), 1 month prior to the intervention then 2 weeks (post-intervention), 6 months and 12 months following the intervention. ANCOVAs showed that the effect of the training sessions on depression was not significant at 2 weeks after the event, but was significant at the 6 month and 12-month follow–ups. Similarly, ANOVA revealed that the effect of the training sessions on anxiety was not significant at 2 weeks post-assessment but was at the 6 month and 12-month follow–ups.

Further studies with adult populations have demonstrated that the ability to recognise and manage emotion through attentional control can improve wellbeing at work (Buruck et al., 2016). In this study, 45 nursing home staff took part in emotional regulation training of 8-9 sessions of 1.5 hours each, which consisted of attentional awareness, modification of emotion and acceptance of emotions when required. Emotion Regulation Skill Questionnaire (ERSQ, German version: Berking & Znoj, 2008) and the Well-being Index (WHO-Five et al., 2003) were used as measures. A control group of 44 who did not complete the workshop also completed the measures. Measures were taken pre-workshop and 6 months post-workshop. A repeated measure MANCOVA demonstrated that performance on emotion-regulation and well-being showed significant Time x Group effect. The nurses who were trained demonstrated greater emotion-regulation skills and well-being after training when

compared to the control group. It should be noted however, that the small effect size is likely the result of the low completion rate at t2 for both the test group and the control group.

These findings suggest that attentional control is state like, developable and creates a positive state for the individual. If as Vogt et al. (2013) suggest, attentional focus is less about attentional bias to threat and more goal dependant, then a change of goal may mean a change of attentional focus thereby also suggesting that attentional control is state like.

Attentional control has also been shown to be relevant to the workplace: Research has shown the contribution of attentional control to adaptive performance and resilience (Genet et al., 2011; Good, 2009; Good et al., 2013) Therefore, attentional control appears to meet the POB criteria.

2.4.5.2 Divergent Thinking

The most common test for divergent thinking is the Alternative Uses test (Batey et al., 2009; Brophy, 2001; Gilhooly et al., 2007; McCrae, 1987; Nausbaum et al., 2011) which is also used for creativity measures, despite, as discussed above, divergent thinking being only one of the elements of creativity. There are few studies on the extent to which divergent thinking can be developed over time, however there are for creativity.

Scott, Leritz and Mumford (2004), suggest that "evidence accrued over the last 50 years does suggest that divergent thinking, as assessed through open-ended tests … does represent a distinct capacity contributing to both creative problem solving and many forms of creative performance" (p.363) but concede that divergent thinking is only one component of creative thought.

In an assessment of three creativity courses in the UK public sector (Birdi, 2005), 71 participants were asked 3 questions about their improvement in work-related idea generation as well as questions concerning the management and divisional support for innovation. The participants were also asked to describe in their own words the impact of the training. Regression analysis showed the strongest predictor of improvements in idea generation was the number of workshops that were attended, irrespective of grade or tenure. There is a lot to fault with this study. There was no "before and after" measure therefore participants were comparing themselves retrospectively, nor was there a control group.

A meta-analysis of 70 studies of creativity training found that the largest contributors to creativity training were divergent thinking and problem solving (Scott et al., 2004).

Furthermore, that creativity training was effective in both academic and organisational settings. From this evidence, it was concluded divergent thinking can be developed through well designed training courses, in particular those that focus on analysis of novel and ill-defined problems that are structured and task-relevant (Wallach & Kogan, 1965).

These studies suggest that divergent thinking is developable and beneficial for the workplace thereby meeting the criteria of POB. Measurement of divergent thinking may prove more challenging. As McCrae observes divergent thinking measures "cannot be objectively scored" (McCrae, 1987 p.1260). However, indirect measures may be possible. Benedek et al. (2012) found that cognitive control, measured by means of a Random Motor Generation test, facilitated the fluent generation of new ideas as measured by five divergent thinking tests to test idea fluency and originality (N=104). Structural Equation modelling demonstrated that the relationship between inhibition and divergent thinking was mediated by intelligence. This was attributed to the need to suppress irrelevant information and focus on the relevant. Thus, measures of cognitive control may also contribute to divergent thinking.

2.4.5.3 Mindfulness

Mindfulness training has become popular over the last few years: a search for 'mindfulness + training + uk' on google produced 28 400 000 results. Considered a form of self-regulation (Evans, Baer & Segerstrom, 2000), being mindful (as opposed to mindless), increases awareness and engagement with the environment (Polak, 2009). This enables individuals to be cognisant of changes in their situation and adaptively respond (Langer, 1989; Weick & Quinn, 1999).

Often, mindfulness studies are conducted in the context of Mindfulness Based Stress Reduction (MBSR) programs, operationalised using meditation (Lindsey & Cresswell, 2017). However, as observed above, for every study that finds a positive impact of mindfulness on attentional control (Chambers, Lo & Allen, 2008; Jha, Krompinger & Baime, 2007; Moore & Malinowski, 2009) there are those that did not: Research has demonstrated that although participants had a greater sense of wellbeing and awareness as a result of mindfulness through meditation there was no evidence of improvement in attentional control following meditation training (Anderson et al., 2007; Polak, 2009). Not all mindfulness training is meditation based. Programs and training courses such as the Monitoring and Awareness Training that focuses participants to attitude and behavioural choices also "train" attentional control (Lindsey & Cresswell, 2017).

In terms of the POB criteria, it seems that there is a positive benefit of being mindful, although, as will be discussed in the Methods section, measurement of mindfulness is usually self-reported. If mindfulness is a form of attentional control, as discussed above, this has been shown to be 'develop-able'.

2.4.5.4 Cognitive Flexibility

Attentional control, divergent thinking and mindfulness are mechanisms to operationalise cognitive flexibility which, as discussed above, has been shown to enable positive behaviours such as adaptability, novel thinking and the ability to deal with situational demands (Cañas, Fajardo & Salmerton, 2006).

The state like nature of cognitive flexibility may be surmised from experiments that suggest mood impacts cognitive flexibility. Murray, Sujan, Hirt and Sujan, (1990) tested the performance of 41 undergraduates on a similarities and differences tests after instigating a positive or neutral mood by focusing on positive or neutral statements. Positive mood participants, as compared with neutral mood participants, performed better in the similarities and differences tasks. Dreisbach and Goschke (2004) supported these findings. In their study, 32 undergraduates rated their mood at the beginning of the experiment and again at the end of the experiment. Performance on a task was measured using letter and digit categorisation requiring focus on specific stimuli and switching between stimuli to focusing on new stimuli. Results showed a significant increase in the reaction times for the neutral group compared to the positive affect group and a significant three-way interaction of affect, interval, and switch condition, suggesting that affect impacts cognitive flexibility.

This supported their hypothesis that positive affect leads to increased cognitive flexibility. However Schwarz (2002) argues that positive feelings are a reflection of our environment, in that when we feel safe we are more likely to take risks, experiment and explore. However, irrespective of the source of positive feelings, affect appears to impact cognitive flexibility, therefore we can conclude that it is state-like.

Finally, as discussed above, the constructs of attentional control, divergent thinking and mindfulness can be developed and trained each of which contributes to cognitive flexibility. As with Good's (2009) work recent experiments using video games have demonstrated that cognitive flexibility is trainable. Glass, Maddox and Love, 2013 demonstrated that 40 hours of gaming on an online strategy game, increased cognitive flexibility (as measured by ANT, Stroop test, task switching and operating span tests) compared with a control group (Bayes factor of 6.77).

Whether taken as a whole, or as individual components, there is sufficient evidence to suggest that Cognitive Flexibility has a state-like element and is developable, thereby meeting the criteria for Psychological Capital.

2.4.6 Cognitive Flexibility and Psychological Capital

The nature of the VUCA environment has, I believe, made the inclusion of Cognitive Flexibility into the Psychological Capital model critical as it may strengthen each of the other resources. Attentional control provides an ability to focus on the relevant and to switch focus as the environment dictates, which may be useful for Hope, Optimism and Self Efficacy (see figure 2.6)

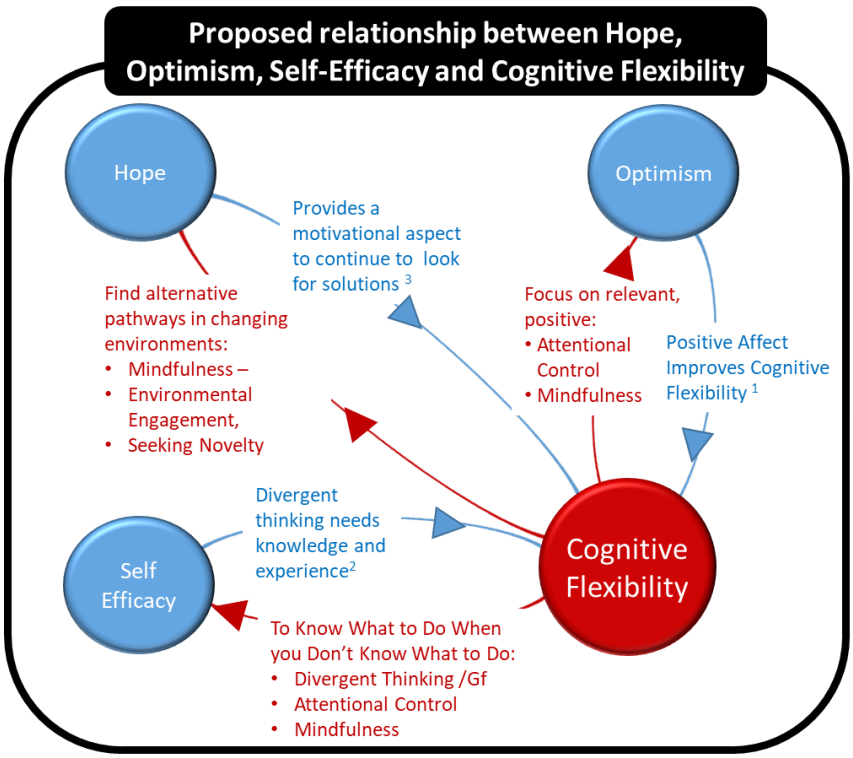


Figure 2.6 Diagram illustrating the relationship between Hope, Optimism, Self-efficacy and Cognitive Flexibility. Key to authors: 1= Dreisbach & Goschke (2004); Isen (2000), Nijstad et al., (2010). Stawski et al., (2010), 2 = Batey, Chamorro-Premuc & Furnham (2008); Cañas,et al., (2006), 3 =Peterson (2000); Snyder, Irving & Anderson (1991)

Awareness of changes in the environment enables a decision about whether to adopt an exploit or explore approach to goal achievement (Cañas, Quesada & Fajardo, 2003; Frith, 2013). When problems are ill defined or solutions are not immediately clear, identifying and seeking novelty could support finding new goal pathways in Hope. Being able to identify new solutions and manage emotions may support self-efficacy beliefs through emotion management.

Overall the ability to allocate and control cognitive resources flexibility and efficiently (Glass et al., 2013) may result in greater resilience as one becomes more mindful of the environment and any subsequent affective responses (Anderson et al., 2007). Optimism may improve cognitive flexibility through the creation of positive affect (Dreisbach & Goschke, 2004; Isen, 2000; Nijstad et al., 2010). The role of experience and knowledge that can result in self-efficacy has been shown to be key to divergent thinking (Batey, Chamorro-Premuzic and Furnham, 2009; Cañas et al., 2006).

Innovative and adaptive behaviours are "essential for addressing new and changing demands in the workplace" (Kark & Carmeli, 2009 p.787) in addition to the ability to create, analyse and transform information (Greenspan, 1997 p.4). If the Psychological Capital model aims to represent the "psychological capacities" (Luthans & Church, 2002 p.59) needed for workplace performance, then perhaps Cognitive Flexibility should be included.

2.5 Psychological Capital: Old Wine, New Bottles?

Psychological Capital is not without its critics.

Hackman (2009) argues that the POB movement has failed to recognise the concept is not new. As far back as 1947, Haldane wrote of the importance of aligning employee "attributes" to the job in order to improve productivity. Hackman (2009) argues that the "new" concept of POB is actually grounded in historical research. In fairness, Luthans & Church (2002) do not argue that Psychological Capital is a novel idea, instead explaining that it leverages existing research and measures. Nevertheless, they maintain that the construct of Psychological Capital is an addition to the field. However, Dawkins and Martin (2013) argue that Psychological Capital replicates Judge and Bono's Core Self Evaluation (CSE) model (2001). Like Luthans' Psychological Capital model, Judge and Bono's model consists of four measurable and unique traits to form a higher order construct of CSE which is defined as "the assessments that people make about their worthiness, competence and capabilities"(Judge et al., 2005, p.257). The construct is made up of: self-esteem, generalised self-efficacy, locus of control and emotional stability (low neuroticism).

Psychological Capital has been found to have a strong, positive correlation with CSE (Luthans et al., 2007a). Luthans et al. (2007a) also claimed that Psychological Capital predicted a unique variance in job satisfaction beyond that of CSE. However results show that when Psychological Capital was added to the regression analysis after CSE, the change was small. A subsequent longitudinal study (N=174 students) measuring Psychological Capital and CSE three times at 7-10 day intervals (T1, T2 and T3) demonstrated both commonalities and differences between the two constructs. The

commonalities in components within each construct have also been noted by Dawkins and Martin (2013). Specifically, they identify overlaps between locus of control and optimism, emotional stability and resilience and general self-efficacy and self-efficacy.

CSE: Locus of control

Locus of control is often assumed to be synonymous with self-efficacy however this is a misconception (Stajkovic et al., 1998b). Locus of control is a cause-and-consequence belief system which relates to the extent to which your actions will influence an outcome (Bosman & Buitendach, 2005; Stajkovic et al., 1998b). Optimism is a belief that a good outcome will occur although in this case does not attribute this to one's own behaviour. However, Hope refers to the agency and pathways to a goal. Combined, optimism and hope create a belief that the goal can and will be achieved and self-efficacy adds to the belief that one has the ability to achieve the goal. Thus, these concepts are related in some ways. Research supports this, for instance Bosman and Buidentendach (2005) in their study of 603 employees from 2 financial services organisations in South Africa, found a moderate positive correlation of between the Optimism (LOT-R) and the Work Locus of Control Scale (Spector, 1988).

CSE: Emotional Stability

The emotional stability component of the CSE model has been described as representing the trait of Neurotisicm (Ferris et al., 2011; Judge et al., 2002; Stajkovic, 2006) and as such is considered trait based (Judge & Bono, 2001; Judge et al., 2003; Stajkovic, 2006). Indeed, Costa and McCrae (1992) suggested that it was largely heritable. Emotional stability (Neuroticism) and resilience are related in the sense that those high in Neuroticism are more likely to hold a negative view of themselves and their resources and abilities (Bardoel et al., 2014; Ferris et al., 2011; Judge et al., 2005). A study (N=282 undergraduates) to test the role of neuroticism, resilience and positive affect on life satisfaction supported this (Lui, Wang & Li, 2012). Results showed a moderate negative relationship between neuroticism and resilience, moderately positive relationship between trait resilience and positive affect and a moderately negative relationship between trait neuroticism and positive affect. The overall model showed a good fit. This suggests that, those with high neuroticism may have a reduced ability to be resilient, supporting Bonanno (2004) and Hobfoll (1989. 2002).

However, neuroticism is trait like but resilience may also depend on how the situation and context is perceived and is therefore state-like.

CSE: General Self-efficacy

Finally, general self-efficacy and specific self-efficacy share a commonality in that they both concern an individual's belief in their ability. Initially the concept of self-efficacy was defined in relation to specific domains (Bandura, 1997; Hobfoll, 2002; Scholz et al., 2002; Sherer et al., 1982) but this has since been broadened to a trait like sense of personal competence (Schwarzer & Jerusalem, 1995; Sherer et al., 1982). Scholz et al. (2002) measured general self-efficacy across 25 countries and used their results to suggest that the scale is a universal construct. However, in Psychological Capital, self-efficacy can be domain specific and is defined as a measure of state. It is this that differentiates general self-efficacy and self-efficacy. And this is the key difference between CSE and Psychological Capital.

CSE is, by definition, broad in scope. Its component traits reflect evaluations of the self in general rather than in a particular context or at a particular moment in time (Judge et al., 1998). As such they are stable. Research by Judge et al. (2000) showed that core self-evaluations measured in childhood correlated with job satisfaction some 30 years later. Therefore, CSE is not designed to be applied to a specific context since this would no longer measure "core" self-evaluation (Chang et al., 2012).

Longitudinal studies demonstrated the greater stability of CSE than Psychological Capital over time (Luthans et al., 2007a, p.563). Peterson et al. (2011) found that Psychological Capital levels changed over a 7 month period. However, the stability of core self-evaluations are not as strong as that of Costa & McCrae's (1994) Big Five personality traits suggesting that there may be some part of CSE which is more state like.

Essentially both models define a relationship to goals. CSE are considered to be antecedents to self-concordant goals; it determines the *nature* of the goals that people choose (Judge et al., 2005). It provides the impetus for goal achievement. Ferris et al. (2011) describe this in the context of approach or avoid: we may have the same goals, we may have the same beliefs in our ability to execute the goals. However you may be doing so to gain something (approach), whereas I may be doing so to avoid any possible risks (avoid). Psychological Capital on the other hand, reflects the *individual's beliefs a*bout the execution of and the outcome of a specific, usually work-related goal.

So, is Psychological Capital "old wine in new bottles"? I think rather it is old wine decanted from an old bottle, for use in a new and specific way.

2.6 Hypotheses

As suggested above, organisations in fast moving VUCA environments may no longer be able to provide the stable mechanisms traditionally used to create Psychological Safety and an environment in which an individual would be *willing* to "show and employ one's self without fear of negative consequences". Therefore, perhaps organisations and employees should be looking to develop individual personal resources such as those in Kahn's availability dimension (1990) so as to strengthen their own psychological capital. This would be expected to lead to the development of the psychological resources to be *able* to "show and employ one's self without fear of negative consequences" (Kahn, 1990, p.708)

This chapter has argued that in today's organisations, Psychological Safety is critical to employee performance in an environment in which dealing with the new and unknown, feeling safe to explore, innovate and even get things wrong is necessary to be able to remain competitive (Hill & Davies, 2017; Luengo-Valderrey & Moso-Diez, 2017). Furthermore, given the increasing physical and emotional demands on employees, psychological resources are needed to be *able* to explore and innovate.

The contribution that this research aims to add to the field is in the individual lens through which Psychological Safety is examined. Although it has been recognised that Psychological Safety is subject to individual perceptions (Baer & Frese, 2003; Carmeli & Gittel, 2009; Edmondson & Mogelof, 2006) most research on Psychological Safety has been in the context of groups and teams. As these become progressively more dispersed, remote and transient understanding the individual's role in the creation of Psychological Safety becomes increasingly important. The line between Kahn's availability and Psychological Safety dimension is becoming blurred.

This research does not seek to exonerate the organisation from continuing to provide mechanisms for engagement or Psychological Safety. Kahn's Meaningfulness dimension has been supported by many studies, particularly in the context of motivation (Hackman & Oldham, 1976; Herzberg, Mausner & Snyderman, 2005; Pink, 2009). The scope of this study is the intrinsic psychological resources of the employee.

Hypothesis 1: Individual employees have a role to play in creating their own Psychological Safety.

Hypothesis 2: Employees with higher levels of intrinsic psychological resources, as measured by Kahn's Availability dimension and Luthans the Psychological Capital model, will have higher levels of Psychological Safety.

Hypothesis 3: Resilience is redundant in the Psychological Capital model as Resilience is an output of Hope, Optimism and Self-efficacy.

Hypothesis 4: Employees with higher levels of intrinsic psychological resources, as measured by Kahn's Availability dimension and Luthans' Psychological Capital model will have higher levels of Resilience

Hypothesis 5: Cognitive Flexibility, a new component of Psychological Capital will replace resilience, creating a new model of Hope + Optimism + Self-Efficacy +Cognitive Flexibility.

Hypothesis 6: Given that both Resilience and Psychological Safety are hypothesised to be outputs of personal resources, there will be a positive relationship between Psychological Safety and Resilience

Hypothesise 7: Interventions to develop personal resources will increase levels of Psychological Safety and Resilience.

2.6.1 Proposed Model

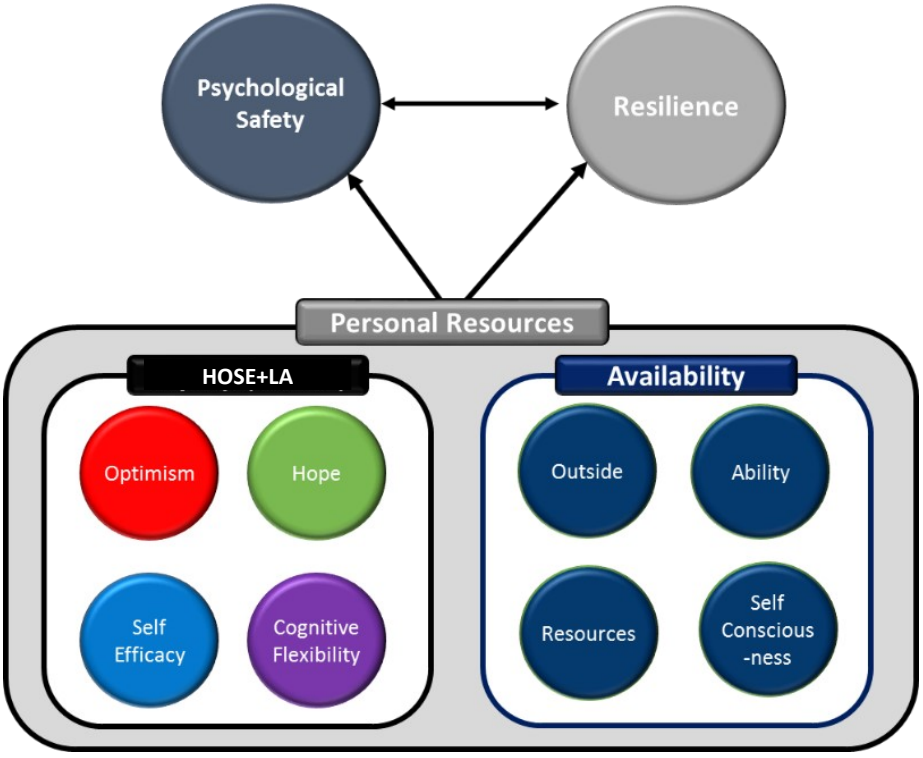


Figure 2.7 Diagram illustrating the hypothesised model

The following chapter will discuss the research strategy to test the above hypotheses and model.

3. Methodology

3.1 Introduction

The purpose of this research is to explore the construct of Psychological Safety by building upon existing models proposed by Kahn (1990), Edmondson (1999) and Luthans (2002). In doing so, new cognitive phenomena are being explored thereby extending our knowledge of this issue. In particular, this thesis will consider Psychological Safety as a construct of the individual not the team. The research aims to explore the psychological resources needed by an individual for Psychological Safety.

Given the psychosocial aspect of this research, multiple methodologies are recommended (Clarke & Hoggett, 2018; Flick, 2004; Mathison, 1988; Modell, 2009). Quantitative measures may result in correlations and enable the application of statistical models, but do not provide deeper causal information (Modell, 2009). Meanings and values that drive responses to quantitative measures are not understood (Giorgi, 2005). Furthermore, by using existing measures, the topic is researched from the same perspective as previous studies (Flick, 2004). Therefore, particularly when creating or developing theories, multiple methods are considered a means to enable deeper exploration of a topic (Clarke & Hoggett, 2018; Denzin, 2012; Flick, 2004; Mathison, 1988; Modell, 2009).

This study aims to apply a convergent methodological approach, using both quantitative and qualitative methods. Such an approach is also referred to as Mixed Methods (Harden & Thomas, 2005), integrative review (Whittemore & Knafl, 2005) and Between-Methods Triangulation (Denzin, 2015).

Data will be collected concurrently although analysed separately providing different perspectives on the topic (Mathison, 1988). Subsequent convergent analysis of both methods in relation to each other aims to provide a deeper understanding of the research (Flick, 2004; Modell, 2009). This approach has been suggested as a means to counteract methodological weaknesses and biases (Rohner, 1977; Spencer, Pryce & Walsh, 2014). For example, there is research to suggest that quantitative methods such as surveys are not absent of respondent bias (see Krumpel, 2013; van de Mortel, 2008).

This is not to say that the weaknesses of one method will be countered by the strengths of another (Jick, 1979; Mathison, 1988). Nor is the purpose to acquire consistent and congruent data (although this would be nice). Modell (2009) argues that congruence may be required when looking to replicate existing research, but is not necessary when looking to extend knowledge (Flick, 2004; Modell, 2009).

Data outputs of multiple methods may be inconsistent or even contradictory (Jick, 1979; Mathison, 1988). Indeed, in the context of organisational psychology research, a positivist approach whereby there is an objective 'right' answer' is unlikely (Cox & Hassard, 2005). When working with cognitive traits such as Psychological Safety, reality and fact is that which is interpreted by the individual. Furthermore, this reality may be reappraised in the light of new information or relevance.

It is in the inconsistent and the different where value lies. It provides the opportunity to identify new perspectives and patterns above what is already known (Jick, 1979; Mathison, 1988; Strauss & Corbin, 1994). This reflects that which is required within the V.U.C.A. environment; a pragmatic approach whereby problems are solved using the most useful method, which may result in the use of mixed methods. (Feilzer, 2010). The depth of meaning that can only be determined through multiple data (Clarke & Hoggett, 2018; Cox et al., 2005; Modell, 2009) can help us better define and subsequently analyse organisational problems (Jick, 1979).

Thus, a convergent approach, using both quantitative and qualitative methods will be used for this research. The following chapter outlines the research strategy of the first two studies: focus groups and a quantitative survey data that were run simultaneously. All studies were approved by the University Ethics Committee.

3.2 Qualitative Research Methods

The hypothesis that the individual employee has a role to play in Psychological Safety was formed through personal experience of working in a global VUCA organisational environment. As a technology company, this was innovative, fast moving and constantly changing. However, the company culture was also highly politicised, competitive and ruthlessly results-focused. Being responsible for the development of leaders, I was able to observe those who flourished within the environment and those for whom the environment led to acquiescence: just "doing what they were told" and keeping their heads down. Through interaction and coaching with a cross section of the employees, I became aware of individuals who were un-willing to speak up or challenge the status quo through fear of the consequences. And yet they were operating in the same environment, even in the same team, as those who were willing to be heard. Thus, the hypothesis that there are individual differences that contribute to Psychological Safety was formed. However, this was only my perspective. Therefore, in order to determine whether this was a viable research topic, employee focus groups were established.

Researching Psychological Safety at the individual level is new to the field. The suggestion that it is related to an individual's internal cognitive resources is, at this stage, conjecture. Preliminary data

was required in order to explore this as yet uncharted topic. Focus groups are considered ideal for such a purpose (Byers & Wilcox, 1988; Longhurst, 2003; McLafferty, 2004; Vaughn, Schumm & Sinagub, 1996) as they provide a forum to test ideas and understand other people's views and opinions (Krueger et al., 2002). Through discussion, challenge and critique a focus group can begin to establish different perspectives on narratives around a new topic not previously considered (Patton, 2002; Wilkinson, 1998) helping to generate new ideas (Breen, 2006 Gibbs, 1997).

The purpose of the focus groups was to gather the opinions of others working in VUCA environments in order to determine whether the hypothesis was worth further quantitative research. The focus groups were designed to answer the questions "Do individuals have a role to play in the creation of their Psychological Safety" and if so, "what are the intrinsic resources the individual needs to do this?" The focus groups therefore needed to ascertain the current mechanisms used by the participant's organisation to create Psychological Safety, what was felt to be missing and where the responsibility for creating these mechanisms lay. Finally, if the group identified the individual employee as having a responsibility for Psychological Safety, the focus groups would be used to determine what the individual needed to be or do to create Psychological Safety for themselves?

3.2.1 Focus Groups 1 and 2

3.2.1.1 Sampling

The manner in which groups were to be accessed was through individual organisations providing a group of colleagues who, although not necessarily working directly together, were all working in the same company, the same industry and importantly the same VUCA environment. This commonality can aid disclosure and conversation thereby providing richer data and a broader range of opinions (Byers & Wilcox, 1998; Gill et al., 2008; Kitzinger, 1995; Krueger et al., 2002; Wilkinson, 1998).

In order to encourage open conversation, a decision was made by the HR department to have separate management and non-management sessions. UK staff were emailed about the research in which a link was embedded to enable participants to book on the session (see Appendix I). In addition, flyers were posted around the office (see Appendix J). Volunteers were asked to sign up for a 2-hour lunchtime focus groups with lunch provided.

3.2.1.1.1 Focus Group 1

The first focus group consisted of four males and one female from a small to medium sized international IT company. They did not hold management positions. Two

participants identified as being between the ages of 25-39 years, the remaining between 40-53 years old. One participant identified as “Asian”, the remaining participants were “White”. Two participants had been at the company less than 1 year, one between 1-3 years and the remaining between 3-6 years.

3.2.1.1.2 Focus Group 2

The second focus group consisted of six managers, four male, from a small to medium sized international IT company. Four were between the ages of 40-53 years and two between 54-64 years. All participants identified as “White”. Three had been with the company for between 1 and 3 years, one for between 3-6 years and two for between 6-9 years.

3.2.1.2 Procedures and Measures

It is recommended that the environment in which the focus group takes place is relaxed and informal to encourage sharing and, ironically, so that the participants feel psychologically safe. However, such groups may be intimidating to some, thereby limiting discussion and challenge (Gibbs, 1997; Kitzinger, 1995; Wilkinson, 1998). In order to minimise such risk, all participation was voluntary, the three focus groups were run with known peers with no direct managers in the room. To ensure the right environment and that all participants were heard, focus groups were to be held in their own office, with lunch provided, facilitated by a facilitator with over 20 years’ experience facilitating sometimes challenging conversations, among leaders of blue chip organisations.

One to one interviews were considered. However, given the nature of the topic, it was felt that the questions may be seen as accusatory. When looking at Psychological Safety at the individual level, the participant may have felt that the question was about what they personally should be doing to create their own Psychological Safety thereby triggering a defensive response. Furthermore, in creating a discussion over lunch, the aim was to create a more relaxed and safe environment.

This data needed to be gathered in no more than two hours in order to minimise the impact on the business, thus the decision to hold the session over lunch time and to provide food.

A session plan for the focus group was created (see Appendix K) although it was recognised that these questions may only be asked if the conversation moved in an appropriate

direction. However, it provided a framework upon which to build the conversation. The session was divided into four parts:

1. Pre-Introduction

The introduction began with the completion of three forms. The first was a consent form as required by the ethics committee (see Appendix L). The second was a demographic questionnaire (see Appendix M). This included questions about gender, age group and race in order to measure the diversity of the focus group participants. Two questions were asked about personal living circumstances as research has shown that stress in work and family domains can spill over into each other (Demsky, Ellis & Fritz, 2014 p196). Finally, three questions were asked about the participant's role in the organisation; tenure, level and job title as these are have been shown to effect Psychological Safety (Nembhard & Edmondson, 2006; Ramos, Jenny & Bauer, 2016).

1	Do you have a job description that represents your role?
2	The tasks that my role involves have remained the same whilst I have been in the role
3	Do you have clear goals?
4	Are there clear procedures/processes as to how you will achieve these goals?
5	My role provides interesting variety
6	I am left to manage my own work
7	My job is secure
8	I am clear where my responsibilities start and stop
9	I feel I am appropriately rewarded for my role
10	I am recognised for good work
11	My manager has my best interests at heart
12	I have sufficient one on ones with my manager
13	My manager is skilled and competent
14	I feel I can safely challenge my manager
15	I am a member of more than one team
16	There is no "game playing" in the team(s) – we can all just be ourselves.
17	I would turn to any member of the team(s) I work with for help or support
18	I am happy to speak out in my team(s)
19	For the team(s) I work with, the members have been the same while I am in this role
20	Compared with my peers, I feel I am good at my job
21	Other colleague's perceptions of me are important to me
22	I am given all the resources I need to do my job
23	I feel I can get everything that needs to be done in a day, done.
24	At the end of the day I feel exhausted
25	I have hobbies and interests outside of work

Figure 3.1 Questions for Focus Group Participants to determine perceptions of existing Psychological Safety mechanisms in their organisation.

The final form was used to determine the existing Psychological Safety mechanisms perceived to be present in the organisation (figure 3.1). This consisted of 25 questions with a "yes/no" answer, designed around Kahn's Psychological Safety Dimensions (1990).

2. Introduction

Upon completion of the questionnaires, a formal introduction was provided using PowerPoint Slides (see Appendix N). This included introduction to the facilitator, her experience, background and the nature of the study. The process of data gathering is

shared, specifically in the context of focus groups and confidentiality assured. The definition of Psychological Safety is then introduced followed by the key question for discussion "Given the volatile, uncertain, complex and ambiguous (VUCA) environment in which we are all working, how Psychologically Safe do you feel and why?"

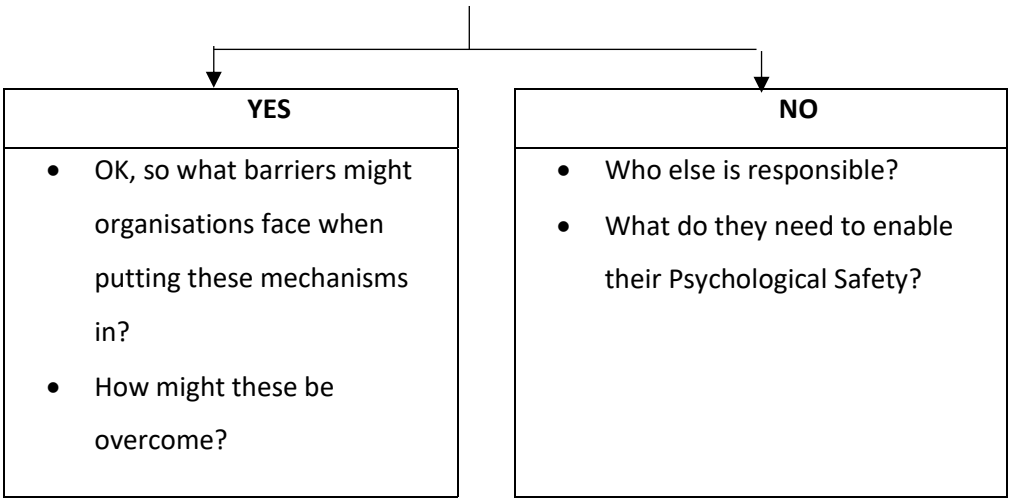
3. Discussion

The discussion began with an interactive question. Having been provided with a definition of Psychological Safety, participants were asked to respond to the question "Generally, how psychologically safe do you feel working here on a scale of 1-10, 1 being not at all, 10 being completely safe"? Answers were written on an A4 piece of paper and held up. The actual scores were not relevant, since the exercise was to prompt discussion. Two follow up questions enabled the development of the discussion.

- "OK, so the lowest score is X. So, what are the specific things that make you feel psychologically safe?"
- "What would need to happen to make the score a full 10 out of 10?"

  Responses to each question were written on a flip chart. Subsequently, a discussion allowed reflection on the ownership of these mechanisms.

- "OK, for these mechanisms that need to be in place, who's responsibility is it to put them in place?"
- Is the responsibility for Psychological Safety purely that of the organisation?



The creation of a set questions might be considered the process followed for a structured group interview rather than a focus group discussion. However, in designing the focus group as semi-structured (Gill et al., 2008), it allows definition of the areas to

be explore through the provision of key questions (Kreuger et al., 2002). Discussions began around an initial posed question and as themes emerged, further clarification questions were asked (Charmaz & Belgrave, 2001; Glaser & Strauss, 1967).

4. Close

The final part of the focus group summarised the findings allowing for final comments/questions. Participants were provided with a debrief letter (Appendix O) which detailed the next steps and any further reading should the participants be interested.

Both sessions were audio recorded then subsequently transcribed (see Appendix P).

3.2.2 Focus Group 3

3.2.2.1 Sampling

Focus group 3 was run as part of a 2-hour module on Psychological Safety as part of an Applied Neuroscience Programme. There were 34 participants between the ages of 25-50 years, of which 12 were male. Participants were predominantly white.

3.2.2.2 Procedure

Participants were divided into groups of 5 or 6 and asked to answer the following questions by documenting their thoughts on flip charts using post-it notes (see Appendix Q).

1. What do you need to feel Psychologically Safe at work?
2. Whose responsibility is this?
3. What do you need in *addition* if you are in a remote/agile team?
4. Which of these are external resources, which are internal (I.e. from within the individual)
5. What else do people need within themselves to feel psychologically safe, given we can't always rely on the organisations to provide us with the external resources

For each question, responses were in different coloured pen/post-it notes in order that responses per question could be recorded. All flip charts were collected at the end of the session for transcription and analysis.

3.2.3 Qualitative Data Analysis Strategy

Interpretative Phenomenological Analysis (IPA) recognises that outputs of qualitative studies are products of the participant's own experiences and perspectives. As such, IPA is concerned with how participants make sense of the experience and therefore is interpretative as well as descriptive (Jeong & Othman, 2016; Smith, 2004). In order to explore the hypotheses of whether Psychological Safety is an individual construct, a pragmatic approach to grounded theory was applied. The analysis involved the development of "in *vivo*" codes in order to perform a thematic analysis.

For the question "What do they (the employees) need to enable their Psychological Safety?" the outputs of the two transcriptions and eight flip charts were collated. From the three focus groups, a total of 205 resources were identified (see Appendix R).

Of these, 89 resources were extrinsic, defined as being created by factors outside the control of the individual, for example leadership style, culture or aligned organisational goals. These were mapped against existing models of Psychological Safety such as Kahn's (1990) Meaningful dimension and James and James Components of Psychological Climate (1989).

The remaining 116 resources were determined to be intrinsic, in that they can be created by the individual themselves. The number of times each resource was mentioned was recorded by group or flip chart. The most commonly mentioned resources were: Learning Ability (20 times), Experience (18 times), Emotional Management (17 times), Trust (16 times) and Values, Vision or Purpose (13 times). Duplicates and synonyms were then removed or amalgamated leaving 75 unique intrinsic responses (see Appendix R: Analysis from All Focus Groups for full process). These were then mapped against Kahn's Availability dimension. However, 35 were unable to be mapped, suggesting that Psychological Safety at an individual level required further resources than those identified by Kahn (1990).

In order to identify superordinate themes across the data, each of the 75 intrinsic resources were written on a post-it note. The post-it notes were then grouped according to "like" statements. For example, 'emotional intelligence' and 'emotionally alert/aware' and 'competence' and 'expertise'.

This exercise was repeated with a further two researchers. Four key themes for individual Psychological Safety were identified.

3.2.4 Limitations

The challenge of focus group discussion is whether the opinion or views were held before the event, or constructed collectively through discourse (Smithson, 2000). The latter may result in a lack of diversity in responses. The topic of Psychological Safety as an individual construct was new to the

literature and thus unlikely to have been previously considered. However, the researcher needs to consider their own role in guiding discussion impartially in order to avoid confirmation bias.

3.3 Quantitative Research Methods

3.3.1 Sampling

3.3.1.1 Students

A pilot of the survey was run with University students. The questionnaire was distributed in the Psychology Department of the University of Reading using SONOS, students were offered a course credit for completion of the survey. Forty-two responses were received. However, two were excluded as they did not complete the survey.

Of the remaining 40 student respondents, 11 were in their 1st year, 2 in their 5th year, the remaining in their 2nd year of study. The age range fell between 17 and 29 (SD=1.964). Only three participants were male. The majority described themselves of "White" ethnic origin (78%), 10% described themselves as Asian, 10% as "other". Only 1 participant was of African origin.

3.3.1.2 Employees

Participants were accessed through the researcher's network, leveraging LinkedIn to communicate the purpose of the study and how to complete it. The survey was also posted on the CIPD forum and the Henley MBA Alumni groups. Fifty participants were recruited using Prolific (www.prolific.co). This resulted in 183 participants. Of the 183 participant responses, 23 were incomplete. Most of these (14) stopped the survey at the first exercise: Task Switching, at which point the survey was only 24% complete. Of the remaining 160 completed data sets, participant ages ranged between 20-65 years (Mean= 35.86, SD = 9.973). The gender balance of respondents was 52.5% male and 93.8% of all respondents described themselves of white ethnicity. Participants were predominantly degree educated or higher (76.2%).

3.3.2 Measures

Further to the extant work on Psychological Safety and resilience, the purpose of the data collection was to test the *a priori* hypothesis: Individuals that intrinsic psychological resources contribute to Psychological Safety. As such the target population was those currently in employment in a VUCA

environment. First, a pilot study was run with students in order to test the survey results and data collection process using an online questionnaire.

The aim of this study was not to develop a new measure for any of the variables being measured. Therefore, existing measures were used, with some minor changes.

Opening questions were used to gather demographic and work related information and designed for this study. The first questionnaire used was May, Gilson and Harter's (2004) questionnaire, based on Kahn's (1990) qualitative research. This measures the psychological dimensions of engagement. In itself this consisted of a number of existing research questionnaires. Luthans Psychological Capital (2002) questionnaire was used to measure the components of Psychological Capital; Hope, Optimism and Resilience. The Self-efficacy measure was replaced with Jerusalem and Schwarzer's Efficacy Scale (1995). Finally, Good's measure of Cognitive Flexibility was measured. Justification for use of these measures follows.

3.3.2.1 Demographic Data

The purpose of this data was to determine the extent to which the respondents were a representative sample.

Standard demographic information was gathered in order to be able to determine the nature of the participant population. Categories were defined as per the UK Governments Office of National Statistics and for gender, as per advice from Stonewall UK (Pasterny, 2016), alternatives beyond male or female were provided offering five options. In addition, seven categories of ethnicity were offered. Employees were asked to indicate their educational level, students their year of study and whether full time or part time. All participants were asked to input their age (see table 3.1).

Gender	Ethnicity	Education Level (*Employees only*)	Type/Year of Study *(Students Only)*
Male	White	Secondary School	Full Time
Female	Asian	College	Part time
Gender variant/non-conforming	African	University (degree)	**Year**
Not listed	Indian	Masters	1st Year
Prefer not to say.	Arabic	Doctorate	2nd Year
Age	Other	Prefer not to say	3rd Year
(2 character input)	Prefer not to say		4th Year
			5th+ year

Table 3.1. Demographic Questions for both Employees and Students

A further question was asked concerning mental health. The survey included question such as: "I feel overwhelmed by things going on here (Availability – cognitive Resource) and "if something can go wrong for me here, it usually will (PsyCap- Optimism). Given the university's commitment to the provision of mental health support, participants were asked if they had a mental health issue and provided information about places to seek help at the end of the survey. From a research perspective, it was important to understand if any outliers may have been a result of current mental health issues (see figure 3.2).

q: Are you currently experiencing any mental health issues? *Note: should you have any mental health concerns there will be information provided at the end of this survey of places where you can seek help or support*
- Yes
- No
- Prefer not to say

Figure 3.2 Additional Mental Health Question for Student Sample

3.3.2.2 Work Data (Employee Only)

Rapid technological changes are considered to be a primary cause of the VUCA environment (Bawany, 2016; Cartwright, 2003; Parker, 2008). For this reason, the survey was initially designed for those working in the IT industry. However, research indicates that other industries are also experiencing the challenges of the VUCA environment such as Financial sector (Bawany, 2016), Education sector (McArthur, 2016), Healthcare (Lees, 2015; Spitz, 2017), FMCG (Pasmore, 2010), transport and logistics (Popova & Shynkarenko, 2016) and large corporations and workplaces in general (Nash, 1994; Parker, 2008).

In turn this impacts the functions within these industries such as HR (Johansen & Voto, 2014), marketing (Paa-Kerner, 2016) and nursing (Cohen, 2014). Given the complex, interconnected world in which organisations are operating (Held, 1997; Kobrin, 2015; Lagarde, 2013), changes in one sector can impact another.

Therefore, the questionnaire was restructured to be relevant to all industry sectors. Participants were asked to select the industry in which they were working. Industry categories were based on the UK government Standard Industrial Classification (SIC) Codes (2007) and an "other" option was provided (see table 3.2)

Detert and Burris (2007) suggest that Psychological Safety is likely to be higher when the employee is more skilled, although, as their study did not measure performance, it provides no data to support this. Recent studies on temporary and permanent workers by Plomp et al. (2019) found no correlation for either group between work experience and Psychological Safety.

It is possible that skill is acquired through experience. Indeed, data from Bienefeld and Grote's work (2014) with airline crews shows a small positive correlation between experience and Psychological Safety. Nembard and Edmondson (2006) found professional status and Psychological Safety to be significantly positively correlated and Bienefeld and Grote (2014) also found this correlation to be stronger the higher the employee is within the organisational hierarchy. However, these studies were carried out in organisations where hierarchy determines experience and status. Therefore, the questionnaire asked for "Time in Industry" to determine experience levels and "Role Type" to determine the nature of their work.

Finally, the type of team in which the participant worked was identified. To date, Psychological Safety has been researched as a team construct. Team membership and leader relations have shown to have strong positive correlations to Psychological Safety (Edmondson & Mogelof, 2006). However, team working is increasingly remote leading to a rise in virtual teams (Dulebohn & Hoch, 2017; Ford, Piccolo & Ford, 2017). The research is limited on how this might impact Psychological Safety. Of 60 studies researched (see Appendix A), there were only two that identified remote teams. Although these studies showed a positive significant correlation between Psychological Safety and remote team learning satisfaction (Ortega, Sánchez-Manzanares & Rico, 2010) and a significant negative relationship with self-consciousness (Zhang et al., 2010), the studies involved students who only had face to face interactions with each other outside of the study and the opportunity to socialise offline.

A more recent study by Swain (2018) found that leader humility significantly predicted psychological safety. While initial studies required participants to *imagine* they were part of a virtual team, a subsequent study involving 147 members of assigned virtual teams demonstrated that teams with a humble leader felt more psychological safety than those with a non-humble leader (Swain, 2018).

3.3.2.3. Kahn's Meaningfulness Dimension

The Meaningfulness dimension measures the level of meaningfulness the participant finds in their work. It includes measures of job enrichment, work role fit and co-worker relations.

3.3.2.3.1 Job Enrichment

May et al. (2004) used Hackman and Oldham's (1974) Job Design Survey (JDS) to determine participants overall level of satisfaction with their job. The full JDS consists of

8 sections and 87 questions measuring the design of jobs, the affective reactions an employee has to his or her job and the "readiness of individuals to respond positively to enriched jobs" (Hackman & Oldham, 1974 p.4). The 15 questions selected for the Job Enrichment subscale were those measuring five key job characteristics as defined by Hackman and Oldham: skill variety, task identity, task significance, autonomy and feedback (α = .85, May et al., 2004 p.21: see Appendix H for questions used).

Some wording was amended, specifically to change "the job" to "my job" in order to make the questions more personal and removal of outdated phrase such as "that is to say" which was replaced by "i.e."

3.3.2.3.2 Work Meaningfulness

The Work Meaningfulness subscale measured the degree of meaning that individuals discovered in their work-related activities. Three questions from the meaningfulness subscale of Spreitzer's Empowerment Measure (1995) were used along with an additional 3 from an unpublished manuscript by May (2003: α =.90).

3.3.2.3.3 Work Role Fit

The Work Role Fit subscale was designed to measure the extent to which a role fits with an individual's identity. Research has shown that the better the fit between a role and the employee's self-concept, the greater the sense of meaningfulness and ability to express themselves (Brief & Nord, 1990; Shamir, 1991). May et al. (2004 used 4 items measuring Work Role Fit (α=.92; May et al., 2004 p.21). Slight grammatical amendments were made in the Work Role Fit questionnaire: the word "with" was included in questions 1 and 4 to improve readability.

3.3.2.3.4 Rewarding Co-Worker relations

Rewarding Co Worker relations subscales consisted of 10 items (α= .93, May et al., 2004 p.21) measuring how rewarding interpersonal interactions were for the employee, in particular respect and value they felt from colleagues. Research has found a relationship between rewarding interactions and meaningfulness (Kahn, 1990; Lock & Taylor, 1990).

The Subscales were totalled to provide an overall score for the participants "Meaningfulness" dimension.

3.3.2.4 Kahn's Psychological Safety Dimension

As discussed in the literature review, the Edmondson Questionnaire most commonly used to measure Psychological Safety is team based, narrow in focus and does not reflect the current reality of teams in VUCA environments. Furthermore, it does not take into account the context provided by other elements of psychological dimension, as Kahn (1990) and May et al.,'s (2004) work do. Therefore, for Psychological Safety, May's questionnaire was used to measure the components of Psychological Safety (2004). This comprised of three section; Supportive Supervisor Relations, Co-Worker Norm Adherence and Psychological Safety.

3.3.2.4.1 Supportive Supervisor Relations

Whitener et al. (1998) identified five categories of behaviour that engender an employee's perception of trust in managers. These were behavioural consistency, behavioural integrity, sharing and delegation of control, communication and demonstration of concern (p.516). May et al. (2004) addressed four of these using a combination of 6 items from the supportive supervision section of Oldham and Cummings' Supervisor Style questionnaire (1996) and 4 items from Butler's (1991) 10 Conditions of Trust Index (see table 3.3).

The Oldham and Cummings questionnaire was originally designed to assess creativity at an individual level in a manufacturing business context (Oldham & Cummings, 1996). However, in doing so, it also measures the extent to which the environment is supportive. Creativity requires a safe environment in which employees can fail without fear, thereby creating "opportunities to experiment" (Kahn 1990 p.711). Therefore, these 6 questions were adopted to measure the extent to which supervisors contributed to Psychological Safety. The overall reliability of this Supportive Supervisor section was reported as α.= 86 (Oldham & Cummings, 1996: p617).

The final category of behaviour in the Whitener's et al. (1998) Trustworthy Behaviours questionnaire was that of behavioural consistency. To measure this, May, et al. (2004) used the 4 items of "overall trust" from Butler's (1991) Creation of Trust Index (α=.97, N=380; α=.91, N=147). This resulted in a total of 10 questions measuring supportive supervisor relations (α = .95, May et al., 2004, p21). For this study, some rewording was carried out in recognition that in today's project and matrix environments an individual may have more than one supervisor who may not necessarily be their hierarchical senior (see table 3.2).

Whiteners Managerial Trustworthy Behaviours	Oldham & Cummings Supervisor Style Questionnaire	Butler's 10 Conditions of Trust Index
Sharing and delegation of control	~~My supervisor~~ Supervisors encourage~~s~~ employees to speak up when they disagree with a decision ~~My supervisor encourages~~ Employees are encouraged to participate in important decisions	
Behavioural Consistency		Employees are treated fairly by my Supervisors My supervisors ~~does what he/she~~ do what they say they will do
Communication	~~My supervisor keeps me~~ I am formally kept informed about how employees think and feel about things by my supervisors ~~My supervisor praises good work~~. I received praise for good work by those who supervise me.	
Behavioural Integrity	My supervisors helps me solve work related problems	I trust ~~my supervisor~~ those who supervise me.
Demonstration of Concern	~~The~~ Supervisors at work encourage~~s~~ me to develop new skills	My supervisors are ~~is~~ committed to protecting my interests

Table 3.2 Table showing the relationship between Whiteners Managerial Trustworthy Behaviours, 6 questions from Oldham and Cumming's Supervisor Style Questionnaire and 4 questions from Butlers 10 Conditions of Trust Index used in May et al.'s (2004) Psychological Dimensions Questionnaire. Red text indicates wording changes for this study.

3.3.2.4.2 Norm Adherence

Kahn's research found that adherence to organisational and co-worker norms provided a greater sense of Psychological Safety. In the research reported here 3 questions devised by May et al., (2004) for their research were used. (α = .61).

3.3.2.4.3 Psychological Safety

Although Edmondson's questionnaire has been used extensively for measuring Psychological Safety, it is designed for use with teams. Therefore, May, et al. (2004)

created their own individual-based questions measuring a participant's perceived level of inter-personal at work and their level of comfort in being themselves at work. There are three questions for this measure (α = .71).

3.3.2.5 Kahn's Availability Dimension

Availability refers to the perceived physical, cognitive and emotional resources available to the individual for investment into their work role. This was measured using four measures: Resources (Cognitive Resources), Psychological Availability (Emotional Resources), Self-consciousness and Outside Support.

3.3.2.5.1 Resources (Cognitive Resources)

Stress, created by having too much to do is commonly referred to as role overload. It results from the perceptions that the demands of the job exceed the individual's perceived available psychological resources. (Brown, Jones & Leigh, 2005; Hobfoll, 2002; Reilly, 1982). Brown et al. (2005) surveyed 172 commission only sale representatives, finding that role overload had a negative impact on self-efficacy and performance. When role overload was low, self-efficacy and performance were significantly related whereas this was not the case when role overload was high. High job demands were also shown to have an impact on Psychological Safety in a study of 126 Australian employees and 180 Malaysian employees from diverse industries (Idris et al., 2012). For both samples, job demands had a negative impact on Psychological Safety. For the Malaysian sample only, there was a significantly negative relationship between psychological demands and Psychological Safety. This suggests that culture may have an impact on psychological demands and Psychological Safety.

May et al., (2004) developed 5 questions (α =0.85) measuring perceived cognitive resources at work, based on Kahn's qualitative study. These each began with "I feel confident…" (See Appendix H).

3.3.2.5.2 Psychological Availability (Emotional Resources)

Emotional resources are used particularly when having to manage emotions at work. Emotional dissonance leads to the depletion of emotional resources resulting in exhaustion (May et al., 2004).

May et al. (2004) constructed 8 questions to measure the Psychological Availability (or emotional resources) individuals perceived themselves to have in the workplace (α =0.91) which were used in this study.

3.3.2.5.3 Self-Consciousness

May et al. (2004) based their three questions on Self–consciousness on Fenigstein, Scheier & Buss's (1975) theory of Self-consciousness. While Fenigstein et al. (1975) proposed two types of Self-consciousness: the private and the public, May et al. (2004) only used three questions from the public self-consciousness scale (α =.83). When revising their model, they eliminated this path since they claimed it did not have "significant impact on the models degree of overall fit" (2004, p.27). Solberg Nes et al. (2011) would concur with this, having been unable to find any support for the role of self-consciousness in goal engagement or self-regulatory behaviour in 50 female patients suffering with Fibromyalgia Syndrome and/or temporomandibular disorders. Self-Consciousness had no significant impact on either persistence or self-regulation (Solberg Nes et al., 2011). Froming and Carver (1981) assessed the impact of public and private self-consciousness on compliance, finding that public self-consciousness did not correlate significantly with compliance. However, contrary to this, there has been research that has shown a relationship between high public self-consciousness and group conformity and identity (Cheek & Briggs, 1982) and suppression of behaviour (Carver & Scheier 1981; Froming & Carver, 1981). Tunnel (1984) measured public self-consciousness with the Jackson Personality Inventory that measures aspects of the personality such as conforming, affiliation and self-monitoring. Those with high public self-consciousness were higher on self-monitoring, conformity and affiliation needs.

If public self-consciousness can influence conformity and a need to belong, this may influence Psychological Safety. Therefore, despite May et al.'s (2004) findings, it was felt that the three self-consciousness questions (α =0.83) should remain. This was included in the employee survey and no rewording was required.

3.3.2.5.4 Outside Activities

To understand the extent to which outside activities depleted or enriched an individual's available resources, May et al. (2004) asked the question "How many hours per week do you participate in organizations other than (the company's name)" (2004 p.22). However, the answer to this question is meaningless. If the answer was "8 hours per

week" this tells us nothing as to whether those 8 hours enriched or depleted resources. Furthermore, this may vary between individuals. What was required here was whether work enabled the individual to partake in outside activities *for the time they felt they needed.* Therefore, the question was reworded to:

"I feel work allows me the time to invest in outside interests and activities such as sports, hobbies, family activities, religious or spiritual pursuits."

A strong social support system is considered a key contributor to personal resources (Barrera, 1986; Cohen & Hoberman, 1983; Holahan et al., 1999; King et al., 1999; Norris & Kaniasty, 1996; Sarason et al., 1986; Thoits, 1995) therefore the following question was also asked:

"I feel I have someone outside of work to talk to if I need to"

A summary of the questions for the Psychological Dimensions Questionnaire is shown below in table 3.3 below. See Appendix H for the full set of questions.

Psychological Dimension	Section of Questionnaire	Author	Averaged	Alpha
Meaningfulness	Job Enrichment	Hackman & Oldman Job Diagnostic Survey (1980)	15 items	.85
	Work Role Fit	May 2003 (Unpublished work)	4 items	.92
	Rewarding Co-Worker Relations	May 2003 (Unpublished work)	10 items	.93
Psychological Safety	Supportive Supervisor relations	Oldham & Cummings (1996) – 6 items Butler (1991) – 4 items	10 items	.95
	Co-Worker Norm Adherence	May 2004	3 items	.61
	PS	Based on work of Kahn (1990)	3 items	.71
Availability	Resources	May 2004	8 items	.91
	Self-Consciousness	Fengistein & Buss 1975	3 items	.83
	Psychological Availability	Based on work of Kahn (1990)	5 items	.85
	Outside Activities	Designed for this study	2 items	

Table 3.3 Summary of Measures used in May et al.,'s (2004) Psychological Dimensions Questionnaire

3.3.2.6. Psychological Capital

A key criterion for the components of the Psychological Capital model was that that they could be measured (Luthans & Church 2002). In developing the Psychological Capital questionnaire (PCQ -See Appendix E), Luthans Avolio, Avey & Norman (2007a) utilised existing measures resulting in a 24-item questionnaire consisting of 6 questions on each of the four elements of Psychological Capital: Optimism, Hope, Resilience and Self-Efficacy.

3.3.2.6.1 Optimism

To measure Optimism, Luthans et al., (2006) selected Scheier & Carver's Life Orientation Test- Revised (1985) (see figure 3.3).

1. In uncertain times, I usually expect the best.
[2. It's easy for me to relax.]
3. If something can go wrong for me, it will.
4. I'm always optimistic about my future.
[5. I enjoy my friends a lot.]
[6. It's important for me to keep busy.]
7. I hardly ever expect things to go my way.
[8. I don't get upset too easily.]
9. I rarely count on good things happening to me.
10. Overall, I expect more good things to happen to me than bad.

Figure 3.3 Scheier and Carvers Life Orientation Test- Revised (1985). Items in brackets were filler questions which Luthans et al., (2006) removed for the Psychological Capital Questionnaire

Scheier and Carver describe optimism as an indicator of an individual's perception of the outcome of goal directed behaviour when facing difficulties. In other words, it is optimism, the general belief that good things will happen in the future that keeps you working towards a goal. (Burke et al., 2000; Kavussanu & McAuley, 1995; Peterson, 2000; Scheier & Carver, 1985).

When looking to measure optimism, Scheier and Carver found that many of the assessments measured the causes of optimism such as self-efficacy, morale, wellbeing etc. (Carver, Scheier & Segerstrom, 2010). They however, wanted to find a "pure measure of expectation" (Peterson, 2000 p.48) irrespective of the source. As a result, the Life Orientation Test (LOT) and its successor the LOT-Revised (LOT-R) were developed.

The LOT-R consists of 10, questions to assess dispositional optimism: 3 positive questions, 3 negative and 4 filler questions, identified by brackets in figure 3.1, (α = .80, Scheier & Carver, 1994). The LOT and the LOT-R have been built on the concept of optimism and pessimism being polar opposites on a single continuum (Burke et al., 2000; Chiesi et al., 2013; Herzberg, Glaesmer & Hoyer, 2006; Scheier & Carver, 1985; Schou-Bredal et al., 2017) and this has drawn much criticism.

Evidence has been found to support the proposal that optimism and pessimism are two separate constructs (Dember & Brooks, 1989a, b; Herzberg, Glaesmer & Hoyer, 2006; Peterson, 2000). Optimism is not simply the absence of pessimism (Peterson, 2000), nor are optimism and pessimism simply opposites (Marshall et al., 1992). As separate

constructs, an individual can demonstrate both optimism and pessimism (Burke et al., 2000; Peterson 2000).

Sheier and Carver (1985) found that a principal factor analysis (N=624) responses to the LOT questions resulted in a two-factor solution in which the reversed scoring items loaded onto the first factor, and the remaining items onto the second factor. However, a confirmatory factor analysis found that both a single factor model and a two-factor solution provided acceptable fits. However, the high factor loading onto the first factor, and the high correlation between the two factors (r=.64), led to Scheier and Carver (1985) to conclude that the LOT was unidimensional, thereby better fitting their concept of optimism and pessimism being on a continuum. However, they did concede that there "is justification for examining the two halves of the scale separately" (p.227). Carver (2013) states that those using the LOT-R wishing to test potential differences between affirmation of optimism and disaffirmation of pessimism should calculate the subtotals separately.

However, there is also research that argues that the LOT-R is bi-dimensional. Principal component analysis by Marshall et al. (1992) indicated that the LOT loaded onto two factors, and a confirmatory factor analysis by Chang, D'Zurilla, and Maydeu-Olivaries (1994) found that the two-factor model was a better fit. More recently, CFA modelling by Cano-García et al. (2015) indicated that of the 7 models tested on LOT-R completion responses two were the best and identical fit: optimism and pessimism as two correlated factors and as a second order factor "life orientation" which consisted for optimism and pessimism. It was the high correlation between the two factors in the first model (r=-0.79) that led to their conclusion that it was a single dimension.

A further criticism of the LOT/ LOT-R has been the use of extreme adverbs such as "always" and "never" (Segerstrom, Evans & Eisenlohr-Moul, 2011). McPherson and Mohr (2005) created an alternate version of the LOT-R, the LOT-M, moderating the adverbs for example substituting ''usually" for "always'' and ''sometimes'' for ''never''. However, this did not impact the dimensionality of the LOT-R (McPherson & Mohr 2005; Segerstrom et al., 2011) although CFA confirmed this measure as being unidimensional.

Overall the LOT-R has been found to be accurate in the assessment of optimism and pessimism (r= .76 and test reliability of .79 over 4-week interval) (Scheier & Carver, 1985). It correlates with the Fibel and Hales's (1978) General Expectancy for Success Scale (r=.51 -.63) and with problem solving (r=.22) (Scheier, Weintraub & Carver, 1986).

Chiesi et al. (2013) in their study into the validity of the LOT-R found item discrimination of above the cut off of 1.35 (Baker, 2001) with the exception of item 1, falling slightly below (α for items was between 1.29 ± .13 and 2.04 ± .20). This "attest[ed] to the precision of the [LOT-R] scale" (Chiesi et al., 2013 p.528)

A possible source of such confusion may be the way in which optimism and pessimism are defined (Chang et al., 1994; Peterson, 2000). These can be described at different conceptual levels; "a personality disposition" (Scheier & Carver, 1987) or situational (Burke et al., 2000; Dember et al., 1989a, b; Marshall et al., 1992; Peterson, 2000). The mechanisms that link optimism to outcomes may vary according to the type of optimism in focus (Peterson, 2000). Peterson's "big optimism" and "little optimism" (2000, p.49) reflects the state-trait nature of optimism. In doing so it shows the possibility that a person can be both generally optimistic, but pessimistic about specific events or outcomes, or vice versa (Burke et al., 2000; Peterson, 2000). The requirement for Psychological Capital is that the construct is malleable and open to change, therefore the LOT-R needed to be adapted to measure the state-like element of optimism. To do this, Luthan's reworded the questions from the LOT-R to make them more workplace relevant. Finally, the four filler questions were removed leaving 6 questions in the PCQ measuring optimism (see Appendix E). These questions were used in this study.

3.3.2.6.2 Hope

Like optimism, hope is considered to be both dispositional and state like (Snyder et al., 1996; Valle, Huebner & Suldo, 2006). Consequently, two versions of the Hope Scale were developed – a Dispositional Hope Scale and a State Hope Scale (correlation between scales = .79: Luthans & Jensen 2002; Snyder et al., 1996).

The goal directed behaviour of hope as is considered bi-directional, having two components; agency or "the willpower", and pathways or "the waypower" (Luthans & Jensen, 2002). The Adult Hope Scale was therefore devised with three items measuring agency and three measuring pathways. In testing its validity, Snyder et al. (1991) administered the questionnaire six times between autumn 1897 and spring 1990 (N=955 – 339). Each time, a factor analysis confirmed the two-factor model and the factors were found to have a strong correlation (between r=.38 – 46, p<.001). The internal consistency of the total State Hope score ranged from a low of α = .74 to a high of α =.84 (Snyder et al., 1991).

The State Hope scale consists of 12 items, 4 measure of agency, 4 of pathways and 4 filler questions (see figure 3.4). Luthans et al., (2006) chose to use only 6 of these, though how the final 6 used in the PCQ were determined is not explained. However, over 4 samples, (N=167, 404, 115, 144) the 6-question scale (three agency and three pathway questions) had an overall reliability of α = > .72.

1. I can think of many ways to get out of a jam.(P)
2. I energetically pursue my goals. (A)
3. [I feel tired most of the time.]
4. There are lots of ways around any problem. (P)
5. [I am easily downed in an argument.]
6. I can think of many ways to get the things in life that are important to me. (P)
7. [I worry about my health.]
8. Even when others get discouraged, I know I can find a way to solve the problem. (P)
9. My past experiences have prepared me well for my future. (A)
10. I've been pretty successful in life. (A)
11. [I usually find myself worrying about something.]
12. I meet the goals that I set for myself. (A)

Scale: 1=Definitely False, 2= Mostly False, 3= Somewhat False, 4=Slightly False, 5 = Slightly True, 6 = Somewhat True, 7= Mostly True, 8= Definitely True

Figure 3.4 The State Hope Scale with Scale (Snyder, Sympson, Ybasco, Borders, Babyak, & Higgins, 1996). P denotes pathway questions, A denotes Agency Questions. Brackets indicate filler questions.

3.3.2.6.3 Resilience

The PCQ has taken 6 questions from Wagnild and Young's (1993) 25 question resilience scale (RS). In their 2006 review of resilience scales, Ahern et al. (2006) considered Wagnild and Young's resilience scale the most appropriate instrument to study resilience in both adolescents and adults due to its psychometric robustness and use across wide audiences. In addition, its positive tone reflects the principles of positive psychology from which Psychological Capital was born.

The purpose of the Wagnild and Young (1993) resilience scale was to "identify the degree of individual resilience…that enhances individual adaptation" which was considered a personality trait (p.167). From qualitative research, Wagnild and Young (1993) identified five characteristics of resilience: "equanimity (a balanced perspective of one's life and experiences), perseverance (persistence despite adversity or discouragement), self-reliance (belief in oneself and one's capabilities), and meaningfulness (realization that life has purpose), and existential aloneness (realization that each person's life path is unique)" (Broyles, 2005 p.64). However, a principal components analysis loaded onto two factors with a correlation between the factor

scores and the total resilience scale score of r=.99, p<.001 (Wagnild & Young, 1993). Factor 1 encompasses the elements of perseverance and self-reliance characteristics of resilience. Factor 2 has the elements of equanimity, meaningfulness and existential aloneness which together is entitled Acceptance of Self and Life (Wagnild & Young 1993) (See table 3.4).

		Factor 1 – Personal Competence
Perseverance & Self-Reliance	1	When I make plans I follow through with them
	2	**I usually manage one way or another**
	3	I am able to depend on myself more than anyone else
	4	Keeping interested in things is important to me.
	5	**I can be on my own if I have to**
	6	I feel proud that I have accomplished things in my life
	9	**I feel I can handle many things at a time**
	10	I am determined
	13	**I can get through difficult times because I have experienced difficulty before**
	14	I have self-discipline
	15	I keep interested in things
	17	My belief in my self gets me through hard times
	18	In an emergency, I'm someone people can generally rely on
	19	I can usually look at a situation in a number of ways
	20	Sometimes I make myself do things whether I want to or not
	23	When in a difficult situation I can usually find a way out of it
	24	I have enough energy to do what I have to do

		Factor 2 - Acceptance Of Self And Life
Equanimity Meaningfulness Existential Aloneness	**7**	**I usually take things in my stride**
	8	I am friends with myself
	11	I seldom wonder what the point of it all is
	12	I take things one day at a time
	16	I can usually find something to laugh about
	21	My life has meaning
	22	**I do not dwell on things that I can't do anything about**
	25	It's okay if there are people who don't like me.

Table 3.4 Wagnild and Young's (1993) resilience scale (RS) showing the questions loading onto two factors. The six questions in bold and underlined indicate those selected for the Psychological Capital Questionnaire and reworded to be relevant for the workplace.

Luthans used 6 questions from the resilience scale, four taken from Factor I and 2 from Factor II sections of the resilience scale (see table 3.5). The literature does not clarify the criteria used to decide upon these six questions, merely they were determined by "an expert panel" (Luthans et al., 2007b p.211). Communication directly with Luthans uncovered that the panel was made up of "colleagues and doctoral students" (email Luthans, 2018 – see Appendix D). The expert panel was also used to reword the

questions to ensure that the measure was of the state of resilience rather than the trait by making them relevant to the workplace.

Finally, as discussed in the previous chapter, Luthans et al., incorporates the process of bouncing back or the need to "go beyond the normal, to go beyond the equilibrium point (Luthans, 2002; Luthans et al., 2006; Youssef & Luthans, 2007) into his definition of resilience. And yet none of the 6 resilience questions selected for the PCQ measure growth achieved from setbacks. The resilience measured in the PCQ is more aligned with the traditional definition of resilience: the ability to adapt and leverage resources to maintain homeostasis or to return to normal functioning (Bonanno, 2004; Carver, 1998; Masten, Best & Garmezy, 1990; McEwen, 2016; Richardson, 2002; Staudinger et al., 1993; Tusaie & Dyer, 2004).

Scale: 1= Not at all confident - 5 Very confident.

1. Analysing a long term problem to find a solution?
2. Representing your work area in meetings with senior management?
3. Designing new procedures for your work area?
4. Making suggestions to management about ways to improve the working of your section?
5. Contributing to a discussion about the company's strategy?
6. Writing a proposal to spend money in your work area?
7. Helping to set targets/goals in your work area?
8. Contacting people outside the company (e.g. suppliers, customers) to discuss problems?
9. Presenting information to a group of colleagues?
10. Visiting people from other departments to suggesting doing things differently?

Figure 3.5 The 10 Item Self-Efficacy Questionnaire by Parker (1998).

3.3.2.7 A Challenge to PCQ's Self-Efficacy Measure

Bandura defined self-efficacy as a task- and context-specific state-like variable; the belief regarding one's capabilities to execute a specific task within a given, specific context (1986, 1997).

The six questions in the PCQ that measure self-efficacy are taken from a 10-item questionnaire devised by Parker (1998: see figure 3.5). However, Parker's questionnaire was devised to measure role breadth self–efficacy for employees involved in a company briefing initiative in which "strategic information could be cascaded down, as well as an opportunity for employees to discuss local issues" (Parker, 1998 p.838). The purpose of the questionnaire was not to establish whether the individual had performed the task but whether they felt confident that they could if it were asked of them, having completed the briefing.

There are two key issues with the use of this questionnaire: the nature of the question content and the assumption that confidence and self-efficacy are synonymous.

3.3.2.7.1 The Question Content

The premise of Parker's questionnaire aligns well with the expectations of employees in today's VUCA environments; that they are able to carry out "a range of activities that are more proactive, interpersonal and integrative in their nature" (Parker, 1998 p.836) and feel confident in their ability to carry out a broad range of roles. Parker's questionnaire measures non-technical abilities and considered "exemplar elements of an expanded role" (Parker, 1998 p.839). These are problem solving, collaborating with those inside and outside the company and discussing company strategy. Bandura recommended that the measurement of self-efficacy is contextual (Bandura 1978, 1986). In order to meet the Positive Organisational Behaviour criteria, self-efficacy measurement should be work relevant and state like to enable development (Luthans et al., 2007; Stajkovic & Luthans 1998a).

Certainly, Parkers' questionnaire was relevant, having been designed for a specific workplace initiative. However, these questions reflect more of a Level 2 training evaluation (Kirkpatrick & Kirkpatrick, 2006, p.21) than testing a level of self-efficacy. However, Luthans' uses these same questions with "no specific roles in mind" (Luthans email 2018 – See Appendix D). In applying such specific questions to workplace roles in general, they may become inappropriate as they cannot be applied to all roles. For example, because an employee may not feel efficacious about "contributing to discussions about the organisations strategy" (Parker, 1998 p.839) does not mean they have low self-efficacy for their own role or tasks. If you were to ask an air steward his or her self-efficacy about flying a plane, the answer would not be indicative of their efficacy of deploying the safety slide when needed. Thankfully. In IT, some of the most highly efficacious programmers may be the least likely to feel capable of highly social activities such as "presenting information to a group of colleagues" or "contacting people outside the company" (Chen, Frolick & Muthitacharon, 2003; Collins, 2014; Felicetti, 2018; Zawacki, 1992). Therefore, the self-efficacy questions used as part of the PCQ are not structured in a way to establish an individual's self-efficacy about the domain relevant to them – that of their current job in their current organisation.

In short, self-efficacy scales must be tailored to activity domains. Efficacy scales must be linked to factors that "determine quality of functioning in the domain of interest" (Bandura 2006 pp.310 – 311). The self-efficacy questions in the PCQ do not do this.

3.3.2.7.2 Confidence and Self-Efficacy

All six questions for the self-efficacy section of the PCQ, begin with "I feel confident…" as Luthans has chosen to "treat confidence and self-efficacy interchangeably" (email, 2018). Although at times Bandura uses confidence and self-efficacy synonymously (1977b, 1994, and 2006) he explains, that although related, self-efficacy and confidence are not the same (1997). He differentiates between what an individual believes that they can do and what the individual believes the likely outcome of what they can do will be (Bandura et al., 2003). He refers to this as Efficacy Expectation and Outcome Expectation. "While outcome expectancies refer to the perception of the possible consequences of one's action, self-efficacy expectancies refer to personal action control or agency" (Schwarzer, Muller & Greenglass, 1999 p.146). Scheier and Carver (1987) argue that self-efficacy and confidence are different as outcome expectancy (or confidence) is not just a product of "personal causation" (p.200). but can also be derived from other sources: e.g. cognitive appraisal (Bandura, 1982a p.127), cognitive bias (Harvey, 1997; Koriat, Lichtenstein & Fischhoff, 1980), "strength and extremeness of evidence" (Griffin & Tversky, 1992, p.412), luck, being "favoured by God" (Scheier et al., 1987 p.171), self-esteem (Tang & Reynolds, 1993) and self-concept (Bandura 1986; Pajeres & Miller 1994; Swann, Chang-Schneider, & McClarty, 2007). Stajkovic (2006) argues that confidence is a higher order construct, its components being hope, optimism, self-efficacy and resilience. However, if Psychological Capital is actually confidence, then the self-efficacy measure is measuring confidence in order to measure a higher order construct of confidence.

As homogenous concepts, confidence could be improved by increasing self-efficacy, and vice-versa. However, research has found this not to be the case. In Bandura's (1977) experiments involving participants with animal phobias, although the participants developed confidence that handling the animal appropriately would prevent being bitten (outcome expectancy) they were still uncertain of their ability to do so (efficacy expectancy). Work by Tang & Reynolds (1993) showed that for individuals with low self-esteem, although their efficacy at the task may have been the same as those with high self-esteem, their confidence in predicting the outcome of their performance was lower

for longer (N=52). The main effect on performance of self-esteem and goal difficulty were significant, suggesting that the participant's actual performance had no effect on their certainty. Indeed, I can be extremely confident that I will fail at flying a plane. Similarly, I may rate my self-efficacy at filling in my tax return as high (given I am still on the correct side of the tax man at the point of writing) but may not feel confident about doing so.

Thus, although there is a strong consensus that there is a relationship between confidence and self-efficacy (Bandura, 1977, 1982a; Brockner et al., 1988; Leganger, Kraft and RØysam 2000; Luthans et al., 2007b; Pajares & Miller, 1994; Scheier & Carver, 1987; Schwarzer et al., 1997; Sherer et al., 1982) there are clearly other factors at play.

In Luthans' Psychological Capital model, the two self-efficacy expectations, outcome and efficacy, are combined, with Luthans defining self-efficacy as belief or confidence in dealing with challenging situations (Luthans, 2002; Stajkovic, 2006). However, the flaw in amalgamating the two self-efficacy expectations, particularly in today's organisations, is illustrated by the first self-efficacy question in the Psychological Capital Questionnaire (see Appendix E). The question "I feel confident in analysing a long-term problem to find a solution" measures both efficacy expectations and outcome expectations. Given the pace of change and the challenges prevalent in today's organisations in anticipating the future, (Friedman, 2005) an employee might have high self-efficacy in analysing a long-term problem but may not be confident that the outcome would be a good solution. Nor does not finding a solution mean they are any less efficacious at analysing a problem. Solutions may not be that obvious in the complex VUCA world (Cousins, 2018). Conversely, an employee may not have high efficacy about analysing a problem but remain confident that they can find a solution given the diverse teams of knowledge workers which they have access to in their organisation (Beechler et al., 2009).

In today's organisational environments and uncertain and ambiguous world, we may have high levels of self-efficacy about what we can do, but may not have confidence in the outcomes (McArthur, 2016; Nadler & Tushman, 1999). In such environments performance requirement may be unclear resulting in discrepancies between efficacy and confidence in outcomes (Bandura, Adams & Beyer, 1977b). Indeed, it is when "performance requirement and situational circumstances are ill-defined" that discrepancies between the two are most likely to occur (Bandura et al., 1977b p.138).

In the context of this study, the expectancy measure is Optimism and the confidence measure is the cognitive resource measure in availability. Therefore, a measure that focuses only self-efficacy was needed.

3.3.2.7.3 The Jerusalem and Schwarzer Self Efficacy Scale

The Jerusalem and Schwarzer General Self –Efficacy Scale (Schwarzer & Jerusalem, 1995) is a well-used internationally valid scale for adults that has been translated into 33 different languages. Across a variety of samples, it has demonstrated high reliability across languages (α = .76 - .90), the majority in the high .80's (Leganger, Kraft, & Røysamb, 2000; Luszczynska, Scholz & Schwarzer 2005; Schwarzer, Mueller, & Greenglass, 1999). In addition, the psychometric properties of the scale have been proven for online completion (Schwarzer et al., 1999).

Each of the 10 items relate to perceived success at coping and measure the trait of self-efficacy. Therefore, in order to meet with Bandura's requirement of self-efficacy being contextually based, and the requirement of Psychological Capital constructs being state like, amendments were made to the questions to make them applicable to the workplace (see figure 3.6).

Jerusalem & Schwarzer General Self Efficacy Scale (1995)		Adapted to be contextual – "at work" for PsyCap
1 I can always manage to solve difficult problems if I try hard enough.	→	1 I can always manage to solve difficult problems *at work* if I try hard enough.
2 If someone opposes me, I can find the means and ways to get what I want.	→	2 If someone opposes me *at work*, I can find the means and ways to get what I want.
3 It is easy for me to stick to my aims and accomplish my goals.	→	3 It is easy for me to stick to my aims and accomplish my goals *at work*
4 I am confident that I could deal efficiently with unexpected events.	→	4 I believe that I could deal efficiently with unexpected events that happen *at work*
5 Thanks to my resourcefulness, I know how to handle unforeseen situations.	→	5 Thanks to my resourcefulness, I know how to handle unforeseen situations *at work*
6 I can solve most problems if I invest the necessary effort.	→	6 I can solve most *work related* problems if I invest the necessary effort.
7 I can remain calm when facing difficulties because I can rely on my coping abilities.	→	7 I can remain calm when facing difficulties *at work* because I can rely on my coping abilities.
8 When I am confronted with a problem, I can usually find several solutions.	→	8 When I am confronted with a problem *at work*, I can usually find several solutions.
9 If I am in trouble, I can usually think of a solution.	→	9 If I am in trouble *at work*, I can usually think of a solution.
10 I can usually handle whatever comes my way.	→	10 *At work*, I can usually handle whatever comes my way.

Figure 3.6 Questions of Jerusalem and Schwarzer's General Self-Efficacy Scale (1995) shown on the left. Questions on the right indicate wording changes made for this study.

Question 4 of the scale asks participants to rate their response to; "I am confident that I could deal efficiently with unexpected events". In addition to providing context to the sentence by adding "at work", given the discussion above, "I am confident" has been

changed to “I believe”. The question now reads “I believe that I could deal efficiently with unexpected events”. This questionnaire was used in the research reported here.

3.3.2.8 Cognitive Flexibility

Cognitive flexibility is an indicator of the ability to be cognitively “ambidextrous”; to be able to flexibly adapt within a dynamic context. It is made up of four variables; Focus, Flexibility, Openness and Divergent thinking. For each of these, a self-rated questionnaire was provided as well as an experiment to test cognitive skills.

3.3.2.8.1 Attentional Control: Focus & Flexibility

Attentional Control is positively correlated with the adaptive strategies of cognitive emotional regulation (from .14 to. 41, $p < .001$) and negatively with maladaptive strategies (from -.34 to -.46, $p < .001$: Fajkowska & Derryberry, 2010). Good (2009) used Derryberry and Reed’s (2002) Attentional Control Scale (ACS) in order to assess the ability to focus on, and flex toward, relevant information.

This 20-item questionnaire measures both Attentional Focus ($\alpha = .80$) i.e. the extent to which one holds attention on one thing, resisting distractions and Attentional Shifting ($\alpha = .65$) i.e. being able to intentionally change your focus as required (flexibility). Scales were positively correlated with each other ($r = .54$) and negatively correlated with fear ($r = -.26$ and $-.40$ respectively) and negatively correlated with sadness ($r = -.17$ and $-.16$ respectively) (Derryberry & Rothbart, 1988).

Fajkowska & Derryberry (2010) tested the validity of the ACS through a principal components analysis specifying a 1, 3, 4, and 5 factor solution (N= 218 undergraduates). The one-factor solution explained 35.4% of the variance (KMO = .88). The three-factor solution 47.8% of the variance (KMO = .87). The three-factor solution consisted of “Attentional Focusing, Attentional Shifting and Divided Attention. However, Fajkowska et al. concluded that the factors “do not contain enough markers in them to support internal consistency” (2010, p.7) and therefore concluded that the one factor solution was more valid.

However, Olafsson et al. (2011) surveyed 728 university students and found that a principal components analysis resulted in a two-factor solution: Nine items loaded onto factor 1 representing attentional focusing and 10 items onto factor 2 representing attentional shifting. One item, question 9 “When concentrating I ignore feelings of

hunger and thirst", was excluded from the factor analysis due to poor correlations with other items. A confirmatory factor analysis provided support for the two-factor solution although a further two items with factor loadings below 0.30 were removed. A similar analysis by Judah et al. (2014) (N=198) also resulted in a two-factor model without the need for removing items. A more recent study published in 2019 by DeVito et al. analysed the ACS on a sample of older adults (N=366) confirming a two-factor solution: Focusing Attention and Shifting Attention. However, when comparing factor loadings between groups, 7 items loaded onto different factors. These were removed and a confirmatory factor analysis was performed on the remaining 13 items, generating a good fit. Devito et al. (2019) also re-ran a CFI on Olafsson et al.'s (2011) 19 item model, finding a good fit.

Overall the Attentional Control Scale is considered to be a useful and robust measure for assessing attentional control (Fajowska et al., 2010; Judah et al., 2014). Despite some studies removing questions, for this study, all 20 questions have been retained for completeness (Good, 2009).

In addition to the self-rating questionnaire, behavioural measures were used to assess attention control and cognitive flexibility. Specifically, the ability to select and focus on the right information by dealing with conflict (interference), to suppress previous actions or routines and then switch to do this again with different information was tested. This is discussed below.

3.3.2.8.2 Attentional Control Behavioural Measure

Attentional control requires inhibition, shifting and updating (Rende, 2000). Posner (1990) and Petersen (2012) when researching the anatomy of attention defined the three processes of attention as alerting i.e. maintaining an alert state, orienting i.e. selecting and prioritising information and executive control i.e., resolving the conflict that occurs when required to withhold a response to stimuli (Botvinick et al., 2001; Fan et al., 2002; Posner, 1990; Peterson, 2012). Measures of attentional control that test these processes include Eriksen's (1995) Flanker Test (Botvinick, et al., 1999) anti-saccade tasks (Judah et al 2013; Fanet al., 2002), the Stroop test (Thompson, Foreman, & Martin, 2000) and Task Switching (Keele & Hawkins, 1982; Derryberry & Reed, 2002b; Good, 2009; Fan et al., 2002). Such tasks require the participant to identify pre-determined stimuli (alerting) amongst other distracting stimuli (orientating) and then inhibit a relatively automatic response (executive control) through attention suppression

or inhibition. The stimuli change so that the participant also needs to be able to shift their attentional resources when required (Derakshan & Eysenck, 2009).

When selecting the measurement protocol for this research, the Stroop test was excluded as an option due to its increasing familiarity in the public realm. Anti-saccade tests were also excluded as there are questions as to whether the relationship between eye movements and attention is as close as previously thought (Posner, 1980; Miyake et al., 2000). In addition, the practicalities of measuring eye movements for the essentially remote participants excluded this option. The remaining options, the Flanker test and Task Switching both ask the participant to respond to relevant stimuli whilst being provided with irrelevant stimuli. As the "relevant" stimuli change throughout the experiment changes in response times as the exercises become more complex, allows the "switch cost" to be measured.

There are differences in opinions as to the causes of the "switch cost". This has been proposed to be due to the time taken to mentally reconfigure the task set (Monsell et al., 2003; Pashler, 2000), the inhibition of control processes (Allport, Styles & Hsieh 1994; Allport & Wylie, 2000), memory retrieval (Monsell & Driver, 2000; Pashler, 2000; Vandierendonck, Liefooghe & Verbruggen, 2010) or conflict-control mechanisms (Brown et al., 2007). It is not for this research to decide between these mechanisms and it is likely that the switch cost involves multiple control mechanisms (Goschke, 2000; Monsell et al., 2003; Brown et al., 2007; Vandierendonck et al., 2010) which include both inhibition (interference) and reconfiguration processes. (Monsell et al., 2003, Brown et al., 2007).

Rogers and Monsell (1995) designed the alternating-runs procedure, in which participants have the opportunity to practise the tasks thereby "preconfiguring" the tasks beforehand. In addition, in order to measure "switch costs" a measure is taken of performance on a non-switching task to compare with performance on a switching task. Rogers and Monsell (1995) suggest that in doing so any switch costs can be "unambiguously attributed to the need to change tasks" (Rogers & Monsell, 1995 p.228).

Rogers and Monsell's Alternative Switching task was used in this research to test the "focus" and "flexibility" element of cognitive agility (1995). The tasks require participants to respond to number and letter combinations. There are three "blocks": in the first block participants are asked to respond to the letters only, indicating whether

the letter is a vowel or a consonant. The second block is a task repeat trial which this time requires a response to numbers only, indicating whether the number is odd or even. The final "mixed" block is the switch task which requires the participant to respond to either the number (indicating whether it's odd or even) or the letter (consonant or vowel) depending on where on the screen the stimulus is located.

Although Miyake et al. (2000) and Judah et al. (2014) used task switching to measure attentional shifting the task requires all three elements of attentional control as described by Posner (1980, 1990). Task switching requires individuals to "reconfigure their cognitive resources" (Monsell & Driver, 2000 p.10) in a way creates what Goschke (2000) refers to as the Stability-Flexibility dilemma (p.351). This refers to having enough cognitive control to be able to focus on the required tasks whilst also having enough control to be able to change attentional focus if required. Similarly, Goschke (2000) refers to the "Selection-Orientation" dilemma (p.350) – choosing between focusing on the relevant and disregarding the irrelevant. Attentional control involves being able to manage this "cognitive conflict".

3.3.2.8.3 Openness/mindfulness

Mindfulness is increasing in popularity and is often considered in the context of meditation. Acceptance, curiosity and openness are all considered elements of Mindfulness (Baer et al., 2006; Bishop et al., 2004; Brown & Ryan, 2004). Langer (1989) defines "western mindfulness" (p.78) as; 1) creating new categories, 2) being open to new information and 3) awareness of more than one perspective (p.62). This ability for adaptive thinking to embrace and deal with the novel has also been referred to as fluid intelligence (Au et al., 2015; Jaeggi et al., 2008; Shipstead et al., 2016). Considered by some as a trait (Pirson et al., 2012; Sternberg, 2000) and even hereditary (Cattell, 1963; Gray, Chabris & Braver, 2003), others see the elements of being open to novelty, or mindful as a "cognitive style" or "ability" (Sternberg 2000 p.11), being in a "flexible cognitive state" (Haigh et al., 2011 p.23) that can fluctuate with mood and stress levels (Friedal et al., 2015; Stawski et al., 2010).

Good felt that there were no suitable performance measures to measure "explicitly, the cognitive aspects of being open" (2009, p.719). Brown and Ryan's Mindfulness Attention Awareness Scale (2003) primarily measures attentiveness and does not measure openness or curiosity (Kroon, van Woerkom & Menting, 2017). The "open-ness" section of the BFAS appears to measure an individual's propensity for aesthetic appreciation

and mind-wandering rather than conscious information processing and the "disruption of routine" involved in the Western definition of mindfulness. Consequently, Good (2009) looked to the Langer Mindfulness Scale (LMS) to measure openness.

At the time of Good's work, the LMS consisted of 46 items across 4 subscales: Novelty Seeking and Engagement, reflecting the "awareness" element of mindfulness and Novelty Producing and Flexibility reflecting the "information processing" element. Since then work by Pirson et al. (2012) reduced the LMS to three subscales; the flexibility sub-scale having been dropped due to unreliability and a history of poor fit with the model (Bodner, 2000; Pirson et al., 2012). Pirson et al.,'s (2012) large study of adults (5 samples, total N=3104) explored the components of the LMS using an exploratory factor analysis (EFA) with principal axis factoring. Factors below .4 were removed. A subsequent EFA resulted in a three-factor solution. CFA using the remaining 14 items resulted in good fit for a three-factor model (see table 3.5).

Novelty Seeking	Novelty Producing	Engagement
One who seeks novelty approached each environment as an opportunity to learn something new and looks specifically and actively for such opportunities	Generates new and useful information, Make associations where previously none existed.	Aware of environment, themselves and the relationship between the two. Notices detailed, is aware of the larger picture as it relationship to their own goals
Qu. 1: I like to investigate things	Qu 2: I generate few novel ideas (R)	Qu 4: I seldom notice what other people are up to
Qu 7: I am very curious	Qu: 3 I make many novel contributions	Qu 5: I avoid thought provoking conversations (R)
Qu 8: I try to think of new ways of doing things	Qu 6: I am very creative	Qu 9: I am rarely aware of changes
Qu. 10: I like to be challenged intellectually	Qu 11: I find it easy to create new and effective ideas	Qu 12: I am rarely alert to new developments
Qu 13: I like to figure out how things work	Qu 14: I am not an original thinker (R)	

Table 3.5 The Three Subscales of the Langer Mindfulness Scale by Pirson, Langer, Bodner and Zilcha-Mano (2012) (R) denotes a reverse scoring item.

In his research, Good used only the Novelty Seeking sub-scale of the four-factor model. However, Western based mindfulness is thought to involve "information processing" (Krieger, 2005 p.137), learning to "switch modes of thinking", noticing new things and disrupting routines (Weick & Sutcliffe, 2006 p.516). Levinthal and Rerup (2006) point out that mindfulness requires being able to respond "to diverse, changing stimuli" (p.505). To do so, one must be engaged and aware of the environment in order to notice changes, which in turn results in the need for the learning and curiosity of the Novelty

Seeking element and finally the Novelty producing element to generate novel solutions (Langer, 1989; Yeganeh, 2006). Therefore, in order to assess mindfulness, as the Openness element of Cognitive Agility all three sub-scales of Langer's Mindfulness Scale (LMS) are required and so were included in this study.

As with Good's cognitive agility research, behavioural measures were included to test for divergent thinking. These tests are also used to test for fluid intelligence.

3.3.2.8.4 Divergent thinking

To test divergent thinking, Good (2009) used the Guilford Alternative Uses Test (AUT) (Wilson, Guilford & Christensen, 1953) and the "prototypical divergent task" (Gilhooly et al., 2007). Participants are required to generate as many uses for an object that they can think of with a view to assessing their creative or novel outputs (Dippo & Kudrowitz, 2013; Silvia, Nusbaum, & Beaty, 2017). The outputs are evaluated against four elements of Divergent Thinking: "fluency is measured by the number of responses: originality is measured by the by the number of responses that are not provided by other participants: flexibility is a measurement of the number of different categories that the responses group into and elaboration is a measure of how descriptive each response is" (Sawyer, 2011 p.47)

There are limitations to this method.

There is no way of knowing if the "original" idea was genuinely divergent, spawned from fluid intelligence, or whether the individual has seen or heard the idea before, thereby leveraging crystallised intelligence. Silva et al., (2017) developed a strategy to ask participants whether the ideas that they generated in the test were "old" or "new" and found that most initial outputs were based on convergent thinking. Dippo et al., found that participants "listed approximately nine ideas before arriving at ideas thought of by less than 10% of the participant group" (2013, p.432). Therefore, it is likely that the AUT tests convergent thinking initially and then divergent thinking latterly and that both are necessary for creativity (Runco & Acar, 2012; Silvia et al., 2017; Vincent, Decker & Mumford, 2002)

It is possible that the test could be more efficient in identifying creative ideas if participants were explicitly asked to be creative with their answers. Thus, when clear instructions on creativity were provided, the quality of participant's creative responses improved (Harrington, 1975; Runco, Illies, & Eisenman, 2005; Silvia et al., 2008). In

addition, Harrington found that such transparent test instructions and marking criteria improve the quality of creative outputs (1975). Harrington does acknowledge the risk that asking someone to be creative may generate anxiety thereby reducing performance. He therefore suggests that instructions and marking information should be provided in a "non-threatening and possibly encouraging manner" (p.451)

The variety of methods used to mark the Alternative Uses Test (AUT) can make it difficult to compare results. Ratings have based on "cleverness" (Wilson et al., 1953) or "uniqueness". However, the challenge with measuring uniqueness of idea was that as sample group sizes increased, ideas that less than 10% of other participants have thought of become increasingly scarce (Nusbaum & Silvia, 2011; Silvia et al., 2008; Wallach & Kogan, 1965). Measuring both fluency and originality has been described as "confounding" resulting in the test becoming nothing more than a "verbal fluency" test (Nusbaum & Silva, 2011 p.38). Indeed, quantity does not equate quality; Sawyer argues that not only should the ideas be unique but contextually relevant to be of value (2006).

Therefore, it is essential that the test checks originality rather than simply production. Determining originality has been criticised as being a subjective process that "cannot be objectively marked" (McCrae, 1987 p.1260). It requires multiple markers to agree "originality" (Amabile, 1982). Silva et al. (2008) discuss the challenges of "weak internal consistency" (2008 p.68) of divergent thinking tasks that results from this. However, Amabile (1982) demonstrated that in fact, when assessing creativity, inter-judge reliabilities were high. McCrae (1987) also found high reliability between judges and suggested that a "consensual assessment technique" (CAT - Hennessey & Amabile, 1988 p.14) should be considered (Silva et al., 2008).

In testing divergent thinking, the AUT assesses the ability to "generate multiple alternative problem solutions" (Vincent et al., 2002 p.163) which results in the use of both convergent and divergent thinking. This is considered useful for testing the ability to cognitively flex, as the participant moves from one chain of thought to another, exploring new approaches to the item (Guilford, 1950, 1956). However, particularly in the context of the VUCA environment, in order to be able to adopt adaptive behaviour, what is required is the ability to solve novel problems "independently of previously acquired knowledge" (Barbey et al., 2014 p.486), also described as fluid intelligence (G_f).

Over the past 70 years, the Ravens Advanced Progressive Matrices (RPM) have been used extensively as measure of G_f (Barbey et al., 2014; Colom et al., 2004, 2009, 2013;

Jaeggi et al., 2010; Schweizer et al., 2007; Stephenson & Halpern, 2013; Sternberg, 2008; Van der Meer et al., 2010; van der Ven & Ellis, 2000). The RPM uses abstract problem-solving tests which require reasoning rather than previous knowledge (Horn & Cattell, 1966; Stephenson & Halpern 2013; Shipstead, Harrison, & Engle, 2016) and this is considered "the prototypical measure of fluid intelligence" (Shipstead et al., 2016 p.773).

Pearson's RPM Technical Manual (2011) state that the RPM's internal consistency (in the US) as α =.85. Results are not impacted by mode of completion and have found to be globally applicable with internal consistency reliability scores across countries of r_{split} = .79-.85.

However, it has been suggested that the success at completing the matrices is not purely a result of G_f. The participant's visio-spatial abilities (Schweizer, et al., 2007; Stephenson et al., 2003) and, due to its relationship with attentional control, working memory capacity (Carpenter, Just & Shell, 1990; Gray et al., 2003; Halford, Cowan & Andrews, 2007; Kane & Engle, 2002) are considered to contribute to completion success, particularly for the more difficult matrix problems (Schweizer et al., 2007).

Both G_f and spatial representations in working memory depend on the same area of the brain – the frontal and parietal regions (Barbey et al., 2014) and so it is no surprise that Colom et al. (2004) found that completion of the RPM is a result of a combination of spatial ability and fluid intelligence. Schwietzer et al. (2007) looked to identify how much of the completion of the RPM was a result of reasoning and spatial abilities. Although spatial ability showed strong correlations with RPM (visualisation: r=0.34, P<0.05, mental rotation: r- 0.27, p<0.05) reasoning demonstrated the highest correlation with RPM (r=0.68, p<0.05).

This study followed that of Good (2009) and included RPM as well as AUT to test divergent thinking.

In total, for employees, the questionnaire consisted of 124 Likert scale questions and three behavioural measures (See table 3.6).

	Questionnaire Section	Author	Qu's	α
Meaningfulness	Job Enrichment	Hackman & Oldman Job Diagnostic Survey (1980)	15	.85
	Work Role Fit	May 2003 (Unpublished work)	4	.92
	Rewarding Co-Worker Relations	May 2003 (Unpublished work)	10	.93
Psychological Safety	Supportive Supervisor relations	6 items from Oldham and Cummings (1996) + 4 items from Butler (1991)	10	.95
	Co-Worker Relations	May et al., (2004)	3	.93
	Norm Adherence	May et al., (2004)	3	.61
	Psychological Safety	Based on work of Kahn (1990)	3	.71
Availability	Emotional Resources	May et al., (2004)	8	.91
	Self-Consciousness	Fenigstein et al., 19975	3	.83
	Cognitive Resources	Based on work of Kahn (1990)	5	.85
	Outside Activities	Designed for this study	2	-
Psychological	Hope	Snyder et al., (1991)	6	.75-.84
	Optimism	Scheier & Carver (1994)	6	.82
	Self-efficacy	Jerusalem & Schwarzer (1995)	9	.76-.90
	Resilience	Wagnild & Young (1993)	6	.91
Cognitive	Langer Mindfulness Scale	Pirson et al., (2012)	14	.83-.89
	Attentional Control Scale	Derryberry & Rothbert (1988)	20	.73-.84
	BEHAVIOURAL MEASURES:			
	Ravens Progressive Matrices (Raven, 1988)	Task Switching (Rogers & Monsell, 1995)	Alternative Uses (Guilford, 1953)	

Table 3.6 Summary of measures used for study questionnaire indicating measure name, author, number of questions from each measure used and reliability alpha's.

3.3.3 Procedures

The self-rated questionnaires and behavioural measures are designed to test the key models in the hypotheses. Survey amendments were made for the students. For example: all of the Job Diagnostic

Survey questions from the meaningfulness dimension questions were removed as they were not relevant for students. Similarly, for Psychological Safety, the 10 “Co-Worker” questions were omitted. This removed 32 questions.

Finally, where the word “work” was mentioned in questions, this was replaced with “here”. For example, “I am confident I can handle the physical demands at work” was changed to “I am confident I can handle the physical demands here”. References to “employees” were replaced by the word “students” and “supervisors” by “tutors”. Thus, for students, the final questionnaire consisted of 89 data questions and two behavioural measures.

The employee questionnaire consisted of 124 Likert scale questions and three behavioural measures. The Alternative Uses test was added with the instructions: “In the next 2 minutes, write down as many uses you can for a ping pong ball (table tennis ball). You can be as creative as you like!” A timer was shown counting down and the participant was unable to move on until the timer was complete.

The self-consciousness measure as described in section 3.3.2.5.3 was added to this survey.

The questionnaires and behavioural measures were created in an online assessment tool PsyToolkit (https://www.psytoolkit.org/) designed specifically for psychological research studies (Stoet, 2010, 2017). The link to the questionnaire was provided in emails and communications. All participants were required to explicitly agree to take part in the survey.

The responses were exported from psytoolkit into and Excel data file, which in turn was exported in SPSS version 22 for analysis.

3.3.4 Quantitative Data Analysis Strategy

Data was exported to IBM SPSS v22

3.3.4.1 Question Responses

Question answers were totalled, reverse scoring where required, creating the following variable LMSTOTAL, ACSTOTAL, PSTOTAL, AVAIL-1 (Availability minus self-consciousness), PSYCAPTOTAL (which included the totals of Hope, Optimism, Self-Efficacy and Resilience). Additional variables were calculated:

- CFLEX: total cognitive flexibility score: LMSTOTAL +ACSTOTAL
- HOSE: As one of the hypothesis was that resilience was an output of Psychological Capital this variable was created that included, Hope, Optimism and Self-Efficacy, but excluded resilience.

- Resiliencetot: all resilience questions totalled.

3.3.4.2 Task Switching Data

Task switching data was exported into an Excel file and formulas used to calculate the time each respondent took to complete the letters section, the numbers section and the mixed section in microseconds. These were then added as a variable in SPSS as 'TS Letters, 'TS Numbers' and 'TS Mixed'. For each participant, the difference between their average completion time on the letters and mixed section and the numbers and mixed section was calculated and created as a percentage of original score. Finally, the average percentage difference was calculated.

3.3.4.3 Ravens Advanced Matrices Data

Scores for the Matrices were calculated as the number of correct answers.

3.3.4.4 Alternative Uses Data

The Alternative Uses Test results required some preparation. Of the 160 respondents who completed this task, there were over 881 individual suggestions as to possible uses for a ping pong ball. Initial analyses involved calculating the number of ideas generated (fluency) and the level of uniqueness of the idea (Dippo & Kudrowitz, 2013; Wallach & Kogan, 1965). This approach required the identification of common categories across 890 responses. Unique responses were also noted: of the 890 responses, 24 were considered "unique" in the sense that they had not been identified by other participants. (See Appendix U) However, this resulted in several problems.

"Uniqueness" as Hocevar (1981) points out, is a subjective construct. The boundary between unique and random is "often fuzzy" (Silvia et al., 2008 p.69). Like Silvia et al. discovered "bizarre, glib and inappropriate responses" (2008 p.69) proved difficult to measure and score. Some were so "left field" that they were unique but the level of relevance was questionable, for example:

"A ping pong ball can be used in frontline politics as it's arguably no less articulate than Boris Johnson or Jeremy Hunt."

Also, the nature of the "unique" ideas did not necessarily provide an indicator as to G_f or divergent thinking. Although the "unique" responses were only mentioned once, this did not necessarily mean they were creative. For example, "*strap to the back of a car at a wedding to make noise"* or *"camera flash softener",* although "unique" responses, both of these uses

may have been experienced by the participant previously therefore generated from crystallised intelligence, i.e. what has been known and experienced rather than g_f. If a person provided 25 answers and came up with one "unique" answer, in terms of originality, would this score be ranked as a "better" result than then person who was able to generate a unique answer after only 4 non-unique ideas?

Measurement of the Alternative Uses was reconsidered, returning to the purpose of the exercise: to test divergent thinking, the ability to generate creative ideas by exploring many possible solutions. In the context of cognitive flexibility, divergent tasks involve executive cognitive process in order to manage interference from the default stereotypical uses of the object (Gilhooly et al., 2007; Nusbaum & Silvia 2011). Therefore, the extent to which an individual can come up with different types of uses may provide an indicator of divergent thinking. Troyer, Moscovitch and Winocur (1997) refer to this as "switching", defined as how often someone switches between categories of use. Nausbaum and Silva demonstrated that those with higher g_f "made significantly more category changes during the divergent thinking tasks" although they also found that the same participants did not necessarily have more ideas per category (2011 p.40).

Therefore, the responses to alternative uses was re-measured using the number of *categories* of ideas rather than ideas themselves (Batey, Chamorro-Premuzic & Furnham, 2009; Hocevar, 1981). For example, for a respondent who provided three ideas: "table tennis, beer pong and tossing game"; these would all be classed in one category; "games". Analysis resulted in 37 categories, one of which was entitled "Unique Responses". This provided each participant with a number that indicated the range of divergent categories of ideas generated in two minutes.

3.3.5 Limitations

In additional to the limitations of the behavioural measures discussed above, online survey completion is not without its challenges. Compared with surveys performed face to face, online surveys have a low response rate (Rice et al, 2017). Being online, surveys are easy to leave when distracted or interest wains (Buhrmester, Kwang & Gosling, 2011). Samples may not be representative of a general population (Wright, 2005), being accessible to only those who view a particular media or website.

The quality of data from self-report surveys may be compromised as respondents answer according to what they believe the desired answer is, either deliberately or otherwise. Alternatively, responses are selected without reading the question in order to complete the task quickly.

This survey utilises multiple existing measures all of which are based on Likert scale scoring. Although probably the most commonly used type of data gathering tool (Hartley, 2014; Jamieson, 2004; Nemoto & Beglar, 2014; Sullivan & Artino Jr, 2013) this is not without limitations. Specifically, for this study, a selection of existing questionnaires have been compiled together resulting in four different scales (see table 3.7). This has the potential to confuse respondents (Hartley, 2014). Furthermore, there is an assumption that the intervals between the scale values are equal (Carifio & Perla, 2007; Jamieson, 2004; Norman, 2010; Sullivan & Artino Jr., 2013). In using different scales, the "interval" between them will be different; a jump from 1 -2 in a four-point scale is a greater change than in a 7-point scale. Therefore, in comparing changes between each scale may compromise results. Of the four scales used, two have a "neutral" centre point which some researchers discourage on the grounds that it can compromise data validity (Johns, 2005; Nemoto & Beglar, 2014). However, there are also those who believe that the removal of the mid-point, thereby forcing answers, can itself compromise validity (Garland, 1991; Jamieson, 2004; Johns, 2005). Nevertheless, some scales effectively provided the opportunity for the participant to "opt out" of agreeing or disagreeing.

Measure	Pts	Scale (From – to)
LMS	7	Strongly Disagree – Strongly Agree
ACS	4	Almost Never –Always
Meaningfulness, Availability and PS	5	Strongly Disagree – Strongly Agree
Hope, Optimism and Resilience	5	Strongly Disagree – Strongly Agree
Self-Efficacy	4	Not at all true- Exactly True

Table 3.7 Summary Of Measures And Scales Used In This Study

All scales, with the exception of self-efficacy and hope, contain reverse items, a practise some frown upon, given that it may cause confusion (Hartley, 2014; Maeda, 2015). However, there are also those who believe that reverse scoring improves validity (Carifio & Perla, 2007). As the scope of this research was not to develop or test a new scale, scales were kept as they were, with the exception of some wording (see study design section) however the challenges of having a variety of scales was recognised.

Common method variance (CMV) may occur while using self- report measures, particularly if the same respondent was used to obtain the data for the dependant and independent variables,

(Podsakoff et al., 2003). This can create inaccurate correlations between variables as participants attempt to maintain consistency between their responses. Where there are overlaps in constructs being measured, the consistency effect may be greater (Johns, 1994).

4. Qualitative Study Analysis: Focus Groups

The pre-assessment questionnaire (see figure 4.1) used in focus groups 1 and 2 was analysed, and results from the managers and non-managers compared (see figure 4.2).

There were three questions in which all managers and non-manager answered Yes:

- Question 5: My role provides interesting variety
- Question 10: I am recognised for good work.
- Question 18: I am happy to speak out in my team(s).

The positive answer to question 18 suggests that these participants generally felt psychologically safe. The questions with the largest difference between managers and non-managers were:

1 Do you have a job description that represents your role?
2 The tasks that my role involves have remained the same whilst I have been in the role
3 Do you have clear goals?
4 Are there clear procedures/processes as to how you will achieve these goals?
5 My role provides interesting variety
6 I am left to manage my own work
7 My job is secure
8 I am clear where my responsibilities start and stop
9 I feel I am appropriately rewarded for my role
10 I am recognised for good work
11 My manager has my best interests at heart
12 I have sufficient one on ones with my manager
13 My manager is skilled and competent
14 I feel I can safely challenge my manager
15 I am a member of more than one team
16 There is no "game playing" in the team(s) – we can all just be ourselves.
17 I would turn to any member of the team(s) I work with for help or support
18 I am happy to speak out in my team(s)
19 For the team(s) I work with, the members have been the same while I am in this role
20 Compared with my peers, I feel I am good at my job
21 Other colleague's perceptions of me are important to me
22 I am given all the resources I need to do my job
23 I feel I can get everything that needs to be done in a day, done.
24 At the end of the day I feel exhausted
25 I have hobbies and interests outside of work

Figure 4.1. Questions for Focus Group Participants to determine perceptions of existing Psychological Safety mechanisms in their organisation.

No.	Question	Non Manager	Managers
9.	I feel I am appropriately rewarded for my role	40%	100%
15.	I am a member of more than one team	20%	50%
16.	There is no "game playing" in the team(s) – we can all just be ourselves.	100%	50%
20.	Compared with my peers, I feel I am good at my job	60%	100%
24.	At the end of the day I feel exhausted	60%	100%

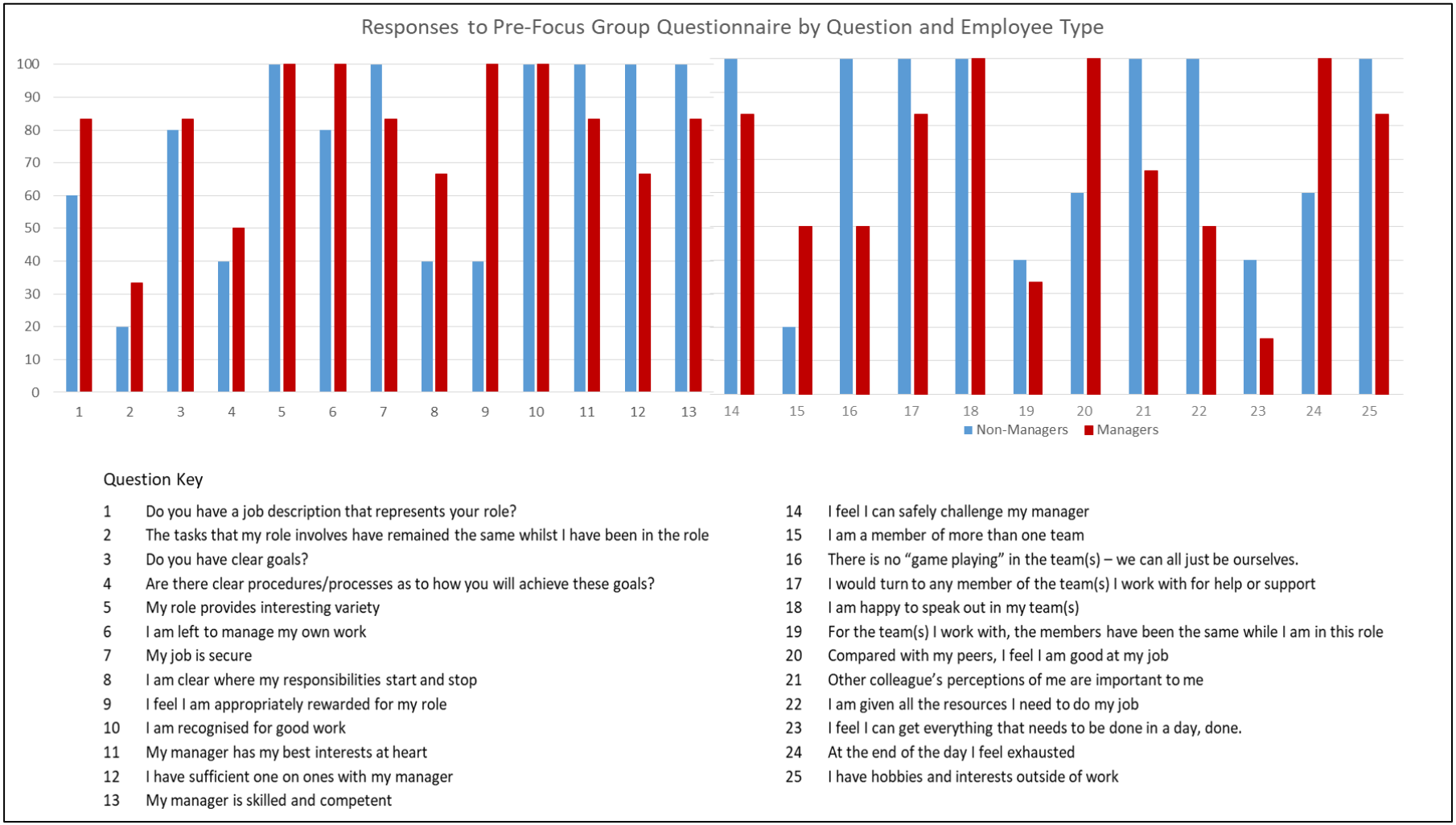


Figure 4.2 Manager and Non Manager responses to Focus Group Questionnaire

In particular, the non-managers all agreed that there is no “game playing” we can all be ourselves. Overall, the non-manager responses suggest a more psychologically safe environment with more time outside of work than the managers. Only 50% of the managers felt there was no game playing and were more likely to be a member of more than one team and feel exhausted at the end of the day. Compared with the non-managers, they felt more competent and appropriately rewarded.

The answer to the question “Is the responsibility for Psychological Safety purely that of the organisation?” was unanimously “no”. All groups agreed that it was a joint responsibility of the organisation, leader/manager and the individual employee.

Outputs of all three focus groups were collated using the transcripts from focus groups 1 and 2 (see Appendix P) and the flip charts from focus group 3 (see Appendix Q). A summary of these outputs is shown in table 4.1 and table 4.2 below.

EXTRINSIC RESOURCES	
Focus Group 1: Non Managers	**Focus Group 2 : Managers**
"element of trust towards your manager, if you know you are going to fail, you know, you say I don't think this is going to work and your manager actually believes you and says, yeah, we can do something else what do you suggest."	"Being a remote person is not easy, not easy because you don't have the same contact, so you don't have the same safety, you don't have the same support in many cases, you gotta be much more self- confident"
"and you've got the old xxxx about knowledge being power, trust is about what they then do with that power. Whether its used against you, that, that would be a negative in related to trust."	"I get, just going to those, I get the feeling that we can, there's the time to talk, and there is plenty of meetings where we can talk so that, that makes me feel more comfortable umm, it's more, so it's more open"
"are power dynamics…it, you, know, could be that, you know, is what I am going to say gonna be a career limiting move"	"Yeah I think you know you feel safe if someone's got your back and you can reach out"
"you tend to feel less safe if you don't see goals on a roadmap being accomplished"	"That they are being listened to"
"a better manager being a person of their word. If they say they will do something, if they say a position is protected, holding to that. If they offered a defence if you like to hold to it."	"Frequent contact I think for the remote members and that's definitively something we need to work on"
"you might have terribly bad psychological relations in your team but very good ones with your manager, or visa versa or it might be that you feel psychologically safe around most of your team members except this one member who you don't trust as far as you can throw him",	"we do organise events, we organise meetings and things and it is about trying to break down inhibitions and get people to build relationships I mean that's why we do those events is cos we do want people to get to know each other a bit so they are not feeling concerned about the interpersonal relationships"
"time I am not sure that will make you feel very Psychological Safe in that environment if you don't agree with that vision"	, there are teams or people in the company that have a higher weight in deciding an argument than others. Not necessarily always the right people , but mostly the right people definitely
	"I think it's the culture cos I've been in companies whereby if you do something wrong they would fire you. They will do anything they could to find a scape goat."

INTRINSIC RESOURCES	
Focus Group 1: Non Managers	**Focus Group 2 : Managers**
"… your self-esteem, your esteem your, your, self-respect"	"Mental..capable of change"
"persona"	"They need to have that confidence, confidence in themselves"
"lot of experience in their own ability"	"They have to learn new stuff and they may not even want to anymore"
"self-reliant person"	"they don't get bogged down in old ways, same ways."
"They can't make themselves feel safe, the only thing they can do is arm themselves against the consequences of not being safe. Greater psychological robustness."	"I've been in teams before this company where very carefully on what you say because the people, the slightest criticism could set them off"
"it's kind of helpful when you have got people who can listen to each other, learn from each other."	"because its its not about whether somebody is you know…at a higher grade or a lower grade, it is their reaction to the information that, I mean if they attach emotion to that, sometimes that emotion is great cos its positive and ……somethings that emotion is detrimental because you either inadvertently threaten someone or their PS is in question
"Confidence comes from the fact that you can't really be a successful contractor and be incompetent"	

"they often have a lot of tenacity, a lot of staying power."	and therefore it brings out you know scratch cat and box and you then have to work out how you are going to cope with that and I think everybody makes a judgement about that before they start a conversation"
"so its airing an idea in front of lots of people is, is about getting those different perspectives, it's a way of bringing together all that knowledge"	"I think everybody assesses things on… on whether the person that is receiving the message is… adult. And that's, that's, psychologically adult rather than you know, age adult."
"was errm their ability to take management and be directed to improve upon it and to accept external input and a number of other interpersonal factors"	"some traits not just knowledge, you are looking for ability to learn, to communicate you are looking for intelligence, you are looking for problem solving, you are looking for go to attitudes,"
"they don't have the emotional engagement, they know that if they work for, if they are in an organisation that they find toxic or difficult, they know they only need to be there for 6 months they don't have to make any kind of long term commitment to an organisation".	"It's very interesting because I think not everyone born in this world has the same capability for change some people are able to take change in their stride, some people are much slower to adapt"
"they might have unpredicatable reactions but they tend to be in a certain category or about a certain thing, whereas what you are worried about really more is personal volatility you know, you don't know what to expect"	"well well, some people have to be in control or they need to feel in control of what's going on, what's happening to them whereas other people are a bit more like oh yeah you know, I get, I get the fact that I can't control everything and there's a big world out there that gonna happen to me and I have to learn how to deal with it."
" I think you want people who can deal with those unexpected things artfully.	"you gotta be much more self- confident"
"mean the adapting and changing is kinda critical in this environment to be able to turn around, adapt and change…"	"you definitely need people who are open minded and it comes back to that willingness to make mistakes or be prepared to make mistakes and willingness to learn and recognise that you don't know everything"
"you ask if that's psychological robustness, I'm not sure it is. I think its evolution."	"the ability to think through problems in different ways …lateral thinking"
"someone who is capable of synthesising new knowledge"	"Sometimes not knowing, they have to find the answer out"
"You need somebody that, that xxxx evolves. Learning ability"	"I'd add emotional intelligence to that as well"
"I think that's the talent shortage…the ability to synthesize new knowledge. To learn, to experiment, to discover things."	"To me the more experience you gain in the work environment or work in generally, the safer you feel in yourself"
"or it could be a humility"	"able to understand consequence and not be frightened of them"
"I think that's a question of confidence"	"Yeah but what he learns with that is agility"
"Flexible really"	"it's problem solving and sort of logical thinking…."
	" if they are still having the attitude of yeah I know everything, it should be my way, they're not open minded, they're not listening to everyone else they are not reacting, the agility you know"
	"I think to me its ability to adapt to situations, unknown situations."
	"how can you adapt to a situation you know nothing about "

Table 4.1 Summary of Quotes from Focus Groups Describing Intrinsic and Extrinsic Resources.

Group#	Q1: What we need to feel safe		Q2: Responsibility?	Q3: Remote/Agile Team?	Q5: Additional
	Internal	External			
1	Being listened to Courage Self-disclosure, Space and time to think Self Esteem	Agreed Values, consistency of rules, rewards across teams, agreed team behaviours, boundaries, inappropriate behaviour called out, Encouraged to challenge and discuss, Shared Values, Easy, fun vibe, social people, Absence of judgement, Knowing who is responsible for what, absolute clarity of expectations, results, outcomes, deliveries. Colleagues are discreet,/no gossip, Opinions valued, mutual respect, non-judgement, diverse teams with lots of different viewpoints, experience, nationalities, cultures and gender mix. OK to make a mistake, group think not tolerated .Rules of engagement, no hierarchy (Korean Airlines) – de ranking. Inclusion, respected as individual not rank. Permission to be honest and vulnerable. Collaboration and team spirit in the big picture, positive encouraging atmosphere, company culture,	A facilitator A leader Me Team Leader Senior Leaders Individuals	More explicit team processes: Values, Vision, Purpose, Strategy, regular check-ins, absolute clarity of results, outcomes, and deliverables. Visibility and track ability and reporting of results. Creating belonging. Reliability, trust, colleagues: proactivity, report back, tell where it's at, not having to ask,	Growth mind-set. Self-awareness Emotions, mindful (Bandura): self-efficacy, confidence, agency, self-esteem, course, self-belief.
2	Be prepared, Hormones, Positive start to the day	Friendship, warmth, cohesion, all are of the team, true safety of family (trust),	All	Clear processes	Clear instructions, communication, strong sense

Group#	Q1: What we need to feel safe Internal	 External	Q2: Responsibility?	Q3: Remote/Agile Team?	Q5: Additional
	(mood), Calmness, serenity, Food (biological sustenance), your inclusive language, Friendship, warmth, cohesion, all are pf the team, true safety of family (trust), absolute trust	absolute trust, All treated the same and all opinion valued and not judged, lack of rank hierarchy, equality of environment, Physical environment/ barriers, no lead, non-judgement, consistency, non-manipulation, reducing inhibitions (booze), basic jargon,	Director, Managers, From the top	Feedback loops, Communication Planning Values, expectation management, Rapport, Feedback loops, social media, regular get togethers, leadership, "ring master" to create a positive vibe in virtual meetings, rules of engagement, schedule,	of self, "very internal" i.e not reliant on external validation, self-belief, self-confidence, expertise (in the niche).
3	OK to opt out, Space and Time, Listening, views being taken into account, needs, Not judged, Recognised, , Respect, Clear Objectives, Acceptance as is, Accepted as a Person, OK to Fail, Being Valued, Accountability, Emotional		Leader Individual Shared Responsibility	Trust, Motivation, Common Goals/Shared Values, Valuing Complexity, Expectations, Accessible Presence, Role Responsibility, Connection mechanisms (skills & tools), Communicate, Collaborate,	Internal Compass Congruence Helpful Beliefs Ability to reframe limiting beliefs. Full accountability for self Ability to create an alternative structure/ external model. Resourceful state- self awareness
4	Reference Point, Energy (towards), Not judged,	Aligned Values (corporate), Transparency, Boundaries, open	Manager	Connectedness, Appreciate circumstances of others,	Stronger sense of self

Group#	Q1: What we need to feel safe Internal	 External	Q2: Responsibility?	Q3: Remote/Agile Team?	Q5: Additional
	Values, Purpose, Strong relationships, Feeling heard, Self-Belief, Strong sense of self, Being ok with not knowing, OK:OK, Being OK with not being "perfect", Respected, Trusted, Appreciated, Self, Feeling Free to think Aligned Values (corporate), Transparency	environment, OK with "failure/mistakes", trust, No repercussions, inclusion, valuing difference, be heard, feel safe, space/reflective, be acknowledged,	Organisation Leader Peers Self	Belonging, Info Sharing, F2f time planned, supporting processes, Comms more structured, Communication, Pick up the phone when can, Direction.	Self-internal referencing Sense of purpose Keep motivation despite external
5	Leaders create opportunities for questions, able to ask questions, humour, I am valued, permission, Ok to be different, no judgement, clarity of expectation, debate and explore, shared values, same outcome, rapport.		Self and others Others and me	Not being left out Proactive Trusted Form planned process points feedback Self-motivation Project tool, common tool, online collaboration tool,	
6	Able to ask questions	Listen to		Equality/Fairness	Confidence in Ability

Group#	Q1: What we need to feel safe Internal	 External	Q2: Responsibility?	Q3: Remote/Agile Team?	Q5: Additional
	Trust Purpose Accountability (behaviours) Listen to Healthy Conflict Respect/Permission	Healthy Conflict Respect/Permission Maps of World Boundaries Contracting No blame Trust		Vulnerability Awareness Commitment In touch with mothership Communication Plan Sense of belonging Empathy	Sense of self Awareness Ability to regulate emotional responses Perspective Decompression "my people!"
7	Respect, Empathy, Understanding, trusting, predictability, goal communication	Respect, trusting, predictability, goal communication, Collegiate team, Acceptance, Inclusion, Friendly People, Empowerment, Shared Humour, A safe space to share, Not too challenging, non-threatening culture, Calm atmosphere.		Culture, Virtual check ins, Anchors and totems.	Reframing external environment: your consciousness of it. Confidence, self-belief Resilience Self-awareness of my own self: anticipate, emotional regulation, training my brain.
8	Feel empathy	Openness	Ourselves	Process for effective communication	Self-care

Group#	Q1: What we need to feel safe		Q2: Responsibility?	Q3: Remote/Agile Team?	Q5: Additional
	Internal	External			
	Feel Respected Not ridiculed Not to feel judged Feel trusted Feel as though difficult thoughts can be expressed, Feel valued	A culture of respect cultivated by organisation Constructive feedback culture Be listened to Feel supported	Organisation	Communication is key Visual communication	Self-empathy Be prepared Competence Self-Esteem Self-Belief Confidence to ask for feedback Resilience

Table 4.2 Summary of Outputs of Focus Group 3 by Question

From each list, duplicates and synonyms were removed or amalgamated. This left 77 unique extrinsic responses and 75 intrinsic responses as shown below (see Appendix R: Analysis from All Focus Groups for full process).

Extrinsic Resources	Intrinsic Resources
1. Outside support and interests	1. Self-confidence
2. Values/vision/Purpose alignment	2. Experience
3. Power dynamic	3. Synthesise new knowledge
4. Leadership style	4. The ability to listen to criticism
5. Inconsistent messages	5. Learning ability
6. Risk	6. Flexibility
7. Familiarity/personal relationship	7. The ability to evolve
8. Predictable reactions /volatility/behaviours	8. Manage reactions/emotional regulation
9. Confidentiality	9. Self-respect
10. Reviews	10. Self-esteem
11. Development	11. No emotional investment in the company
12. Manager keeps word	12. Perceived judgements
13. Non-oppressive environment	13. Adopting persona
14. Rivalries/internal Competition	14. Capabilities
15. Hierarchical conflict	15. "Measure of People"
16. Strong successful manager	16. Clear who you are
17. Autonomy/latitude	17. Communication skills
18. Organisational flexibility	18. Emotionally "alert"/aware
19. Relevant goals	19. Adapt and change
20. Continuous improvement	20. Ability to take criticism
21. Financial security	21. Psychological robustness
22. Conflict	22. Life outside of work /work life balance
23. Culture	23. Locus of control
24. Learning environment	24. Low emotional engagement
25. Trust	25. Self-reliance
26. Aligned goals	26. Curiosity
27. Fun	27. Novelty/innovation
28. Collaboration	28. Learning ability
29. Frequent contact	29. Suspension of ego
30. Reassurance/praise	30. Willing to learn from others
31. Clarity of actions/activities	31. Deal with the unexpected
32. Norms	32. Adult ego state
33. Control	33. Perceived judgement
34. Boundaries	34. Knowledgeable
35. Ability to be heard/contribute	35. Independent
36. Authority	36. Agility
37. Clear expectations	37. Ability to "offload"/switch off
38. Support	38. Willing
39. Trust	39. Perspective

40. Consistency of rules	40. Take risks
41. Rewards across teams	41. Proactive
42. Agreed team behaviours/roles	42. Intelligence
43. ·Boundaries	43. Problem solving
44. Calling out of inappropriate behaviours	44. Logical thinking
45. Encouraged to challenge/discuss/ask qu.s.	45. Lateral thinking, different perspectives
46. Social people	46. Creativity
47. Absence of judgement	47. Other people's reactions
48. Discreet colleagues - no gossip	48. Open minded
49. Opinions valued	49. Courage
50. Mutual respect	50. Self-disclosure
51. Diversity	51. Time to think/reflect
52. Group think not tolerated	52. Be prepared
53. Permission to be honest/vulnerable	53. Hormones/mood
54. Collaboration	54. Calmness/serenity
55. Team spirit	55. Self-belief
56. Positive encouraging environment	56. OK to not know
57. Food/sustenance	57. OK with not being perfect
58. Friendship/warmth	58. ·Growth mind-set
59. Cohesion	59. ·Mindful
60. Recognition	60. ·Self-efficacy
61. Acceptance as a person	61. Agency
62. Accountability	62. ·Internal validation
63. ·Transparency	63. ·Expertise
64. ·Rapport	64. ·Internal compass
65. ·Contracting	65. ·Congruence
66. ·No blame	66. ·Helpful beliefs
67. ·Empathy	67. ·Reframe limiting beliefs
68. ·Predictability	68. ·Resourceful state
69. ·Empowerment	69. ·Perspective
70. ·Safe Space to share	70. ·Resilience
71. ·Not too challenging	71. ·Training my brain
72. ·Non-threatening	72. ·Self-care
73. ·Not ridiculed	73. ·Self-empathy
74. ·Constructive feedback	74. ·Competence
75. ·Communication	75. ·Humour
76. Trust	
77. Being listened to/feeling heard	

Table 4.3 Table Showing Extrinsic And Intrinsic Resources That Result In Psychological Safety, As Identified By All Focus Groups; Duplicates And Synonyms Removed.

Next, the identified resources were counted by the number of groups in which the resource was mentioned as a measure of the importance of each resource across individuals (see Appendix R). Twelve resources were mentioned in 50% or more of the groups (See table 4.4).

Resources For Psychological Safety	No of groups identified
Trust	7
Self-confidence*	6
Mutual respect	6
Values/vision/Purpose alignment	5
Being listened to/feeling heard	5
Clear expectations/goals/outcomes	5
Self-belief*	5
Strong sense of self*	4
Self-awareness*	4
Manage reactions/emotional regulation*	4
Absence of judgement	4
Acceptance as a person	4

*Table 4.4 List of the resources leading to Psychological Safety most often mentioned in Focus Groups. *Indicates Intrinsic Resources*

4.1 Extrinsic Resource Analysis

Although extrinsic resources are not the key focus of this study, for all focus groups, the response to the initial question "What do you need to feel Psychologically Safe at work?" resulted in participants first looking to extrinsic organisational resources. Thus, those identified were mapped against Kahn's Psychological dimensions model (1990). All extrinsic resources from the focus group fell into the Meaningfulness or Psychological Safety dimensions (See table 4.5). Kahn does not mention "Reassurance and Praise" in his research although he recognises that feeling appreciated and receiving positive feedback are essential parts of work interactions, therefore this could also be mapped in the Meaningfulness Dimension. "Group think not tolerated" was not referred to in Kahn's work, however, seeing criticism as constructive was indicative of an open and supportive climate and therefore could be mapped within the Psychological Safety dimension.

	Dimensions of Psychological Conditions		
	Meaningfulness	**Safety**	**Availability**
Definition	Sense of return on investment of self in role performance **Financial Security**	Sense of being able to show and employ self without fear of negative consequences to self-image, status or career.	Sense of possessing the physical, emotional and psychological resources necessary for investing in role performances.
Experiential Components	Feel worthwhile, valued and valuable. Feel able to give and receive praise from work and others in the course of work.	Feel situations are trustworthy, secure, predictable and clear in terms of behavioural consequences.	Feel capable of driving physical, intellectual and emotional energies into role performance.
Types of Influence	Work elements that create incentives or disincentives for investment of self • **Company Culture** • **Vision/Roadmap**	Elements of social systems that create situations that are predictable, consistent and non-threatening.	Individual distractions that are more or less pre-occupying in performance situations.
Influences	**Tasks:** Jobs involving more or less challenge, variety, creativity, autonomy and clear delineation of procedures and goals • **Not too challenging** • **Relevant Goals** • **Autonomy & Latitude** • **Aligned Goals** • **Clear Actions/Activities** • **Boundaries** • **Clear expectations/ goals/ outcomes** • **Contracting** • **Empowerment**	**Interpersonal Relationships**: ongoing relationships that offer more or less support, trust, openness, flexibility and lack of threat. • **Absence of judgement** • **Trust** • **Relaxed & Fun Environment** • **Empathy** • **Strong Relationship** • **Not ridiculed**	**Physical Energies:** Existing levels of physical resources available for investment into role performance.
	Roles: Formal positions that offer more or less attractive identities through fit with a preferred self0image and status and influence. • **Interpersonal Relationships** • **Power Dynamic** • **Appropriate Leadership style for needs** • **Reviews** • **Authority** • **Accountability** • **Development**	**Group and Intergroup Dynamics:** Informal, often unconscious roles that leave more of less room to safety express various parts of self: shaped by dynamics within and between groups in organisations. • **Positive Encouraging Environment** •**Team Spirit** • **Discreet colleagues; no gossip** •**Healthy Conflict** • **Inclusion/Diversity/inclusive Language** •**Respect** •**Safe Space to Share**	**Emotional Energies:** Existing levels of emotional resources available for investment into role performance.

	• **Values/Vision/Purpose alignment**	• **Non-Oppressive Environment** • **(No) rivalries/internal competition** • **Learning Environment**	
	Work Interactions: Interpersonal interactions with more or less promotion of dignity, self-appreciation, sense of value, and the inclusion of personal as well as professional elements. • **Being listened to/feeling heard** • **Friendship/Warmth** • **Constructive Feedback** • **Continue improvement** • **Opinions Valued** • **Rapport** • **Social People** • **Team Membership** • **Mutual respect** • **Collaboration**	**Management Style and Process**: leader behaviours that show more or less support, resilience, consistency and trust and competence. • **Non threatening** • **OK to make mistakes** • **Inconsistent Messages** • **(No) Hierarchical** • **Consistency of Rules** • **Strong, successful manager** • **Manager Keeps Word** • **Recognition** • **Risk** • **Predictability** • **Control** • **Confidentiality** • **Communication** • **No Blame**	**Insecurities:** levels of confidence in own abilities and status, self-consciousness and ambivalence about fit with social systems that leave more or less room for investment of self in role performances,
		Organisational Norms: shared system expectations about member behaviours and emotions that leave more or less room for investment of self during role performances.	**Outside Life:** Issues in peoples outside lives that leave them more or less available for investment of self during role performances.
RESOURCES NOT PLOTTED: • **Food/Sustenance** • **Organisational Flexibility** • **Group think not tolerated** • **Rewards across team** • **Reassurance/praise** • **Outside Support and interests**		• **Permission to be honest /Vulnerable** • **Agreed team behaviours/roles** • **Predictable reactions /behaviour/ (no) volatility** • **Other peoples reactions** • **Calling out inappropriate behaviours** • **Acceptance as a person** • **Norms**	

Table 4.5 Table showing the mapping of Extrinsic Resources Identified by Focus Groups as Key to Psychological Safety onto Kahn's Psychological Dimensions Model (1990).

Organisational Flexibility was not mapped, although this could be considered a sub-component of Organisational Culture, shown in the Meaningfulness dimension. Food and Sustenance and Outside Support and Interests, although relevant for the Availability Dimension, are not cognitive resources and therefore were not mapped. The extrinsic resources identified by the focus groups also reflect the findings of James and colleagues (James & James, 1989; Jones & James, 1979) who, when working with the American Military, identified four determinants of Psychological Climate; Role Stress and Lack of Harmony, Job Challenge and Autonomy, Workgroup Co-Operation, Friendliness and Warmth and Leadership Facilitation and Support. Each of the outputs of the focus groups were mapped to these four determinants (see table 4.6).

In being able to map the extrinsic resources to both Kahn's Meaningfulness and Psychological Safety dimensions as well as James and James' (1989) model of Psychological Climate, suggests that the organisation and leaders still have a key role to play in the provision of Psychological Safety. This supports extant research on Psychological Safety that Organisational and Management support are key contributors to Psychological Safety (Detert & Burris, 2007; Edmondson, 1999; Frazier et al., 2017; Idris et al., 2012; Kahn, 1990; Nembhard & Edmondson, 2011). However, when participants were then asked if this meant that Psychological Safety was solely the responsibility of the organisation, all groups unanimously disagreed and felt it was a joint responsibility, the individual also having a role to play in their Psychological Safety.

James and James Components of Psychological Climate:

	Role Stress and Lack of Harmony	Job Challenge and Autonomy	Workgroup Cooperation, Friendliness and Warmth	Leadership Facilitation and Support
All Levels	Aligned Values Aligned Goals Clear Expectations Boundaries Clarity of actions/activities (No) rivalries/internal competition Not too challenging	Autonomy and latitude Control	Accountability Non threatening No blame Inclusion/Diversity/inclusive language Cohesion Continue improvement Relaxed and fun environment	No hierarchy Communication Transparency Support at work OK to not know Learning environment **Being listened to/ feeling heard**
Organisational Level		Organisational Flexibility		· Company culture
Organisation – Leader	**Values/vision/purpose alignment** Vision/roadmap **Clear expectations/goals/outcomes** Hierarchical conflict Power dynamic Calling out of inappropriate behaviours ·Predictability ·Healthy conflict Non- oppressive environment Consistency of rules	· Encouraged to challenge/discuss/ask qus Permission to be honest/vulnerable Group think not tolerated	Rewards across teams Authority	**Respect** Risk · Positive encouraging environment
Leadership Level	Appropriate leadership style for individual needs		Strong successful manager Manager keeps word	
Leader – Team	·Contracting	Opinions valued	Strong relationships · Friendship/warmth ·Safe space to share Interpersonal relationships Mutual respect ·Not ridiculed Norms Agreed team behaviours/roles ·Rapport **Acceptance as a person** Collaboration Other peoples reactions	**Trust** **Absence of judgement** ·Empathy Recognition Ok to make mistakes Frequent contact ·Constructive feedback Reassurance/praise Confidentiality
Team Level			Team membership · Discreet colleagues - no gossip	

Table 4.6 Table showing Extrinsic Resources Identified by Focus Groups as being Key to Psychological Safety mapped to James & James' Psychological Climate model (1989).

4.2 Intrinsic Psychological Resource Analysis

A more detailed analysis was performed on intrinsic resources (see Appendix R). Of the 75 identified intrinsic resources 35 could not be mapped against Kahn's Availability Dimension (see table 4.7).

Dimensions of Psychological Conditions : Availabilty		
Definition	Sense of possessing the physical, emotional and psychological resources necesssary for investing in role performance	
Experiential Components	Feel capabile of driving physical, intellectual and emotional energies into role performance	
Types of influence	Individual distractions that are more or less pre-occupying in role performance situations	
Influences:	**Physical Energies:** Exisiting Levels of physical resource available for investment into role performance	
	Emotional Energies: Exisiting levels of emotional resources available for investment into role performances	**Insecurities:** Levels of confidence in own abilities and status, self-consciousness and ambivalence about fit with social systems that leave more or less room for investment of self in role performances.
	- Calmness/Serenity - Work/Life Balance/Decompression/ Ability to offload/switch off - Helpful beliefs/reframe limiting beliefs - Adult Ego State, Suspension of Ego - Emotional control/Emotional Regulation/Manage reactions/ Hormones/mood/Other peoples reactions - Resourceful State - Emotional Intelligence - Empathy/Self-Empathy - Emotionally Alert/Aware - Level of Sensitivity - Percieved Judgements - Locus of Control	-Self-Esteem -Self-efficacy -Self-Respect -Persona/Clear who you are -Self-Reliance/ Independent -Internal Compass -Congruence -Internal Validation -Self-Awareness -Self-Disclosure -(Self) Confidence -Self-Belief -Experience -Capabiltities - Competence -Knowledge - Intelligence -Expertise
	Outside Life: Issues in peoples outside lives that leave them more or less available for investments of self during role performances - Life outside of work	

Unmapped:

1. Ability to take criticism	12. Novelty/Innovation	23. Open-minded
2. Learning Ability	13. Willing to learn from others	24. Courage
3. Flexibility	14. Deal with the unexpected	25. Time to think/reflect
4. The ability to Evolve	15. Agility	26. Be Prepared
5. No emotional investment in the company	16. Willing	27. OK not to know
	17. Take Risks	28. OK with not being perfect
6. Measure of People	18. Proactive	29. Growth Mindset
7. Communication	19. Problem Solving	30. Mindful
8. Adapt and Change	20. Logical Thinking	31. Resilience
9. Psychological Robustness	21. Lateral Thinking: Different Perspectives	32. Training my brain
10. Low Emotional Engagement		33. Self-Care
11. Curiosity	22. Creativity	34. Self-empathy
		35. Humour

Table 4.7Table showing the Intrinsic Resources identified by Focus Groups as being key to Psychological Safety, mapped to Kahn's Availability Dimension (1990).

Therefore, an alternative grouping was explored.

Using the thematic analysis approach described in Chapter 3, the first theme that was identified across all researchers was that of “demonstrable skills”. Items one might put on a CV. For example, experience, expertise and communication skills. Initially this group included items such as creativity, innovation and problem solving. A further group was created that was given a working title of “Personal Attributes”. This included “confidence, self-esteem, humour and independent”. The final group was referred to as Cognitive Skills and contained 57 of the intrinsic resources.

This section was further divided by creating a group specifically for emotional regulation which contained 25 items. The remaining were labelled Cognitive Agility, defined as being able to think flexibility and in different ways. Having created four themes, it was clear that there were overlaps between them. For example, ‘helpful beliefs’ could sit in both Cognitive Agility and Emotional Regulation. ‘Self-Reliance’ in both Capabilities and Personal Attributes.

Therefore, a Venn diagram was created and with overlaps between categories indicated. To determine a category, the question was asked, “for this item, what is required?” and “Does an individual need cognitive agility, emotional regulation, a sense of self or skills to achieve this item?” This resulted in the renaming of “personal attributes” to sense of self.

Eight resources were identified as being common to all four groups (see figure 4.3 below) Two items were uncategorised: Life outside work/work life balance, which was debated as a extrinsic resources and “no emotional investment in company”, which was a comment specific to an organisation but it was felt it was covered generically in the term “low emotional engagement”.

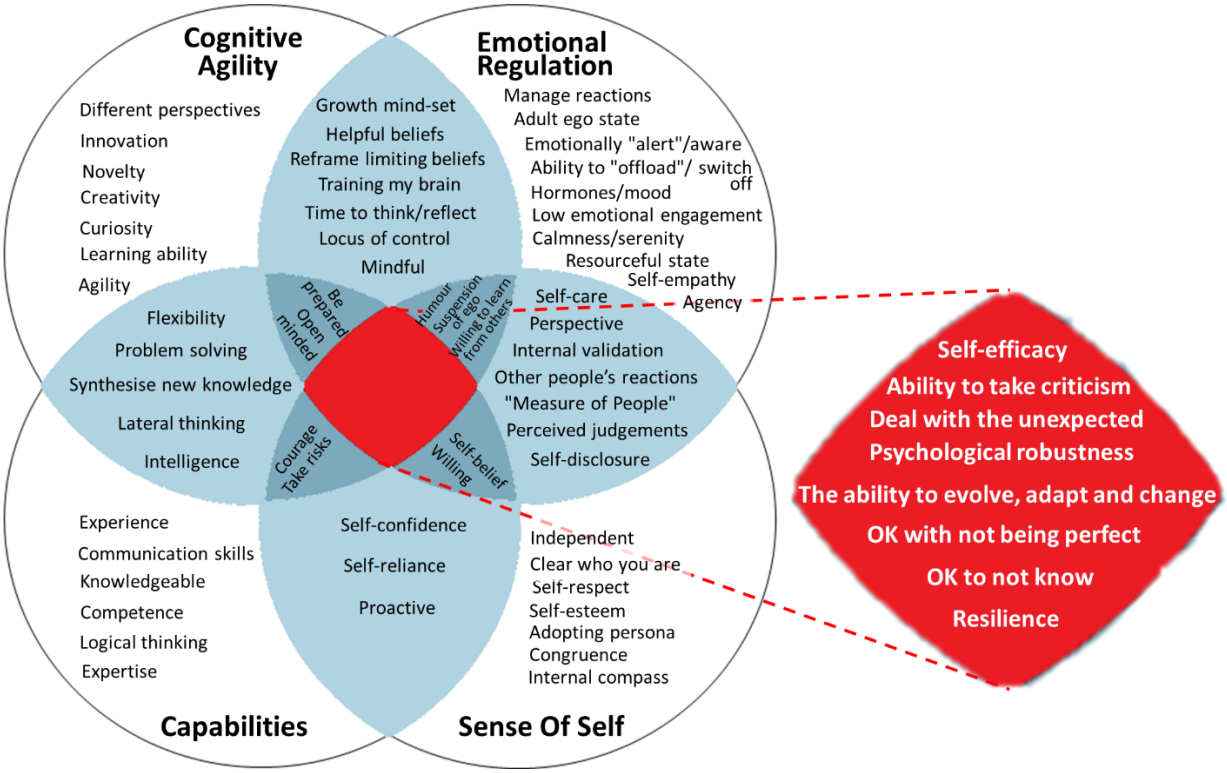


Figure 4.3 Diagram Showing The Grouping Of Intrinsic Resources Identified By Focus Groups As Key To Psychological Safety, Showing The Intrinsic Resources That Fell Into All Four Groups.

Findings from these focus groups support Hypothesis 1 that individual employees have a role to play in the creation of their own Psychological Safety. Analysis from the output of the focus group suggest four key areas of intrinsic resources needed for Psychological Safety: Capabilities, Sense of Self, Emotional Regulation and Cognitive Agility.

4.3 Limitations

These focus groups were semi-structured to enable exploration and discussion. As a result, there was some time spent discussing less relevant topics. Managing this was the role of the researcher, who was able to refocus the discussion. However, this may have been seen as leading the group to support a confirmation bias.

The relatively homogenous nature of the groups does not represent all professions or industries. Although the gender split was 45% male, 55% female, participants were predominantly white and well educated. The common responses in these focus groups did enable confirmation of hypotheses 1, providing a justification for further quantitative research.

It may be argued that the self-selecting nature of participation would result in attendees who felt psychologically safe enough to participate. However, often examples given were from past experiences of feeling unsafe rather than in their current role, although this poses the risk of recall bias or response bias.

All participants were reassured that their input would be confidential. For focus group three, the participants were attending a training course by choice and the environment considered a “safe” space.

4.4 Discussion

These findings support extant research that components of the employee’s environment such as trust (Butler, 1991; Payne & Clark, 2003) and being a team player (Bell, 2007; Driskell et al., 2006) are required for Psychological Safety. The results of studies of Psychological Safety in the workplace have shown improved employee resilience (Gordon & Coscarelli, 1996; Glantz & Sloboda, 2002; Kumpfer, 2002; Sutcliffe & Vogus, 2003; Staudinger et al., 1993; Vogus & Sutcliffe 2007), empowerment (Spreitzer, 1995) and team adaptation and learning (Burke et al., 2006; Edmondson, 1999).

Research has recognised that how the individual perceives and interacts with extrinsic mechanisms will affect their perceptions of Psychological Safety. In their meta-analysis on psychological climate, Baer and Frese (2003) found that perceptions of the organisation and leader had stronger correlations with psychological climate than with job perceptions. A similar finding by Edmondson et al. (2016) showed little relationship between Psychological Safety and job type in the healthcare sector. Perceptions of leadership effectiveness however were found to correlate significantly with Psychological Safety..

Interestingly, although the literature has cited higher status and hierarchy in organisation to correlate with higher Psychological Safety (Bienefeld & Grote, 2014; Nembard & Edmondson, 2006) in some aspects of Psychological Safety, the managers in the focus groups scored lower than the non-managers. Perhaps being in a management position exposes you to information that may reduced your Psychological Safety.

The findings of this focus group study support this research; that extrinsic organisational mechanisms are important to the creation of Psychological Safety. However, to date, there have been no studies to identify which are the intrinsic psychological resources required for Psychological Safety.

The outputs of these focus groups suggest that intrinsic resources that contribute to Psychological Safety are recognised by individuals and are important to them. Therefore, a more detailed, quantitative analysis was performed.

5. Quantitative Study Analysis

5.1 Test for Power

An *a priori* power anlaysis was performed using G*Power v 3.1 (Faul et al, 2007) to test the required sample size to perform a linear multiple regression analysis (R^2 increase) for 8 predictors (Hope, Optimism, Self-Efficacy, LMS, ACS, Cognitive Resources, Emotional Resources, Outside Support). For Employees, the power calculation was performed using 9 predictors as self-conciousness included in their survey. A medium effect size (f^2=.15), an alpha of .05 and β error of 0.80 was used. Results showed that a total sample of 109 participants were required for the student study and 114 participants for the employee study in order to have the desired probability of detecting and increase in R^2.

INPUT			OUTPUT		
Test Family	**Statistical Test**	**No of tested predictors**	**Critical F**	**Total Sample Size**	**Actual Power**
F test	Linear Multiple Regression – Fixed model R^2 increase	8	2.03	109	0.80
		9	1.97	114	.80

*Table 5.1 Outputs of Power Calculation using G*Power*

Although the target of the research was employees, an initial pilot study was run.

5.2 Student Survey Analysis

The survey was implemeneted as described in Chapter 3.

5.2.1 Descriptives

Of the 40 student respondents, 11 were in their 1st year, 2 in their 5th year, the remaining in their 2nd year of study. The age range fell between 17 and 29 (SD=1.964). Only three participants were male. The majority described themselves of “White” ethnic origin (78%), 10% described themselves as Asian, 10% as “other”. Only 1 participant was of African origin.

5.2.2 Test for Normality

Descriptives and frequency analysis was run on the variables of LMS, ACS, Psychological Safety, Availability, Resilience and Psychological Capital and HOSE (see Appendix S). The 5% Trimmed Mean for all variables were within acceptable suggesting normal distribution.

Three possible outlier were identified: Participant 96 for LMS, participant 102 for Resilience and 94 for HOSE. However, the removal of these three participants made an insignificant difference to the means as shown in table 5.2.

		LMS	ACS	Psychological Safety	Availability	Resilience	Psychological Capital	HOSE
N	Valid	40	40	40	40	40	40	40
Mean		65.55	49.13	11.40	46.83	21.23	85.18	63.95
N		37	37	37	37	37	37	37
Mean		65.89	49.27	11.32	47.24	21.49	84.84	63.35

Table 5.2 Comparison Of Mean Between Participants Before And After The Removal Of 3 Potential Outliers.

5.2.3 Behavioural Measures

5.2.3.1 Task Switching

Task switching data was exported into an Excel file and formulas used to calculate the time each respondent took to complete the letters section, the numbers section and the mixed section in microseconds. These were then added as a variable in SPSS as 'TS Letters, 'TS Numbers' and 'TS Mixed' (see table 5.3). For each participant, the difference between their average completion time on the letters and mixed section and the numbers and mixed section was calculated and created as a percentage of original score. Finally, the average percentage difference was calculated (see table 5.4).

	TS Letters	TS Numbers	TS Mixed
Fastest	595	207	116
Slowest	3133	3077	3548
Mean	945.54	832.78	1329.77
SD	443.99	430.01	528.29

Table 5.3 Table showing the fastest, slowest and mean completion time (in ms) for the three Task Switching Sets.

5.2.3.2 Ravens Advanced Matrices

The minimum score was 1 achieved by 3 (7.5%) of participants. The maximum score of 8 was achieved by only 1 person (2.5%). The mean score was 4.03 (SD=1.834).

5.2.3.3 The Alternative Uses Test

Only three students completed this section, one of which filled the answer space with random letters. Therefore, the data was excluded.

	Average Time Taken (MS)
TS Letters Set Completion	945ms
TS Numbers Set Completion	937ms
TS Mixed Set Completion	331ms
Difference between Letters and Mixed Set	574ms
% Differences between Letters and Mixed Set	-60.7%
Difference between Numbers and Mixed Set	566ms
% Differences between Numbers and Mixed Set	-60.4%
Average Task Switching Difference between mixed and non-mixed sets	-61%

Table 5.4 Table showing example Calculation process of Task Switching Data for each Participant.

5.2.3 Correlation Analysis

A correlation analysis was conducted to determine whether the predicted relationships between variables were present. Bonferroni correction adjusted the p value to p=.006. Significant correlations with Psychological Safety were Psychological Capital (r=.445, p=.004) and HOSE (r=.431, p=.005).

Psychological Capital showed significant and strong positive correlations with Resilience (r=.816, p<.000), Availability (r=.784, p<.000) and as expected HOSE (r=.979, p<.000).

HOSE was significantly correlated with resilience (r=.683, p<.000) and Availability (r=720, p<.000)

CFLEX strongly positively correlated with resilience (r=.610, p=.000) and moderately positively with Psychological Capital (r=.546, p=.000), HOSE (r=.478, p=.002) and Availability (r=.466, p=.002). However there was no significant correlation with Psychological Safety.

None of the results from the behavioural measures correlated significantly with any of the variables. (See table 5.5).

		Psychological Safety	Psychological Capital	HOSE	CFLEX	Resilience	Availability	TSAv%Diff
Psychological Capital	Pearson Correlation	.445**						
	Sig. (2-tailed)	.004						
	N	40						
HOSE	Pearson Correlation	.431**	.979**	1				
	Sig. (2-tailed)	.005	.000					
	N	40	40	40				
CFLEX	Pearson Correlation	.217	.546**	.478**	1			
	Sig. (2-tailed)	.179	.000	.002				
	N	40	40	40	40			
Resilience	Pearson Correlation	.377*	.816**	.683**	.610**	1		
	Sig. (2-tailed)	.016	.000	.000	.000			
	N	40	40	40	40	40		
Availability	Pearson Correlation	.407**	.784**	.720**	.466**	.776**	1	
	Sig. (2-tailed)	.009	.000	.000	.002	.000		
	N	40	40	40	40	40	40	
TSAv%Diff	Pearson Correlation	-.276	-.147	-.166	-.034	-.050	-.034	1
	Sig. (2-tailed)	.112	.408	.352	.848	.776	.848	
	N	40	40	40	40	40	40	40
Ravens	Pearson Correlation	-.064	-.141	-.193	.215	.071	-.080	.043
	Sig. (2-tailed)	720	.424	.272	.224	.696	.656	.808
	N	40	40	40	40	40	40	40

Bonferroni corrected p value =.006 **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 5.5 Correlations (Cronbach Alpha) between study variables for student data.

Correlation analysis was performed using the subcomponents of Psychological Capital and Availability. Bonferroni correction adjusted the significant p value to .005. As a result, the only significant correlation for Psychological Safety was with Optimism (r=.505, p=.001).

The components of Psychological Capital, moderately and positively correlated with each other with the exception of Resilience and Hope (r=.394, p=.012).

The cognitive flexibility measures correlated with self-efficacy (LMS, r=517, p=.001: ACS, r=407, p=.001) and resilience (LMS, r=579, p=.000).

See table 5.6 below and Appendix T for full sized text.

		Psychological Safety	Hope	Optimism	Self-Efficacy	Resilience	Outside support	Cognitive Resources	Emotional Resources	ACS	LMS
Hope	Pearson Correlation	.242	1								
	Sig. (2-tailed)	.132									
	N	40	40								
Optimism	Pearson Correlation	.505**	.498**	1							
	Sig. (2-tailed)	.001	.001								
	N	40	40	40							
Self-Efficacy	Pearson Correlation	.309	.661**	.499**	1						
	Sig. (2-tailed)	.053	.000	.001							
	N	40	40	40	40						
Resilience	Pearson Correlation	.377*	.394*	.582**	.739**	1					
	Sig. (2-tailed)	.016	.012	.000	.000						
	N	40	40	40	40	40					
Outside Support	Pearson Correlation	.274	.428**	.154	.283	.173	1				
	Sig. (2-tailed)	.087	.006	.334	.077	.287					
	N	40	40	40	40	40	40				
Cognitive Resources	Pearson Correlation	.289	.422**	.398*	.614**	.740**	.212	1			
	Sig. (2-tailed)	.070	.007	.011	.000	.000	.188				
	N	40	40	40	40	40	40	40			
Emotional Resources	Pearson Correlation	.382*	.495**	.660**	.545**	.711**	.266	.624**	1		
	Sig. (2-tailed)	.015	.001	.000	.000	.000	.098	.000			
	N	40	40	40	40	40	40	40	40		
ACS	Pearson Correlation	.034	.393*	.176	.407**	.424**	.018	.366*	.375*	1	
	Sig. (2-tailed)	.836	.012	.278	.001	.006	.910	.020	.017		
	N	40	40	40	40	40	40	40	40	40	
LMS	Pearson Correlation	.301	.235	.303	.517**	.579**	.299	.288	.351*	.390*	1
	Sig. (2-tailed)	.059	.144	.058	.001	.000	.061	.072	.026	.013	

Bonferroni adjusted p value = .005 **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 5.6 Correlation Analysis (Cronbach Alpha) Of Subcomponents of Student Data Variables

The significance of relationships between Psychological Capital and other variables was little changed when resilience was removed (variable HOSE) (see table 5.7). Furthermore, Availability had a high correlation with Psychological Capital and HOSE.

	Psychological Capital	HOSE
CFLEX	r = .546	r= .478
P.S.	r= .445	r= .431
Availability	r= .784	r= .720

Table 5.7 Comparison of correlations between variables of Cognitive Flexibility (CFLEX) Psychological Safety (P.S), Availability with Psychological Capital and HOSE.

This raises two areas for further consideration. Firstly, are Availability and HOSE or Psychological Capital measuring the same construct and secondly does resilience contribute to Psychological Capital?

In order to explore whether Availability and HOSE measure the same construct in this population, an exploratory factor analysis was performed.

5.2.4 Exploratory Factor Analysis

An exploratory factor analysis using principal components analysis and direct oblimin rotation was performed.

All 42 of the HOSE and Availability questions were input into the analysis. However, the analysis was inconclusive as the matrix was not positive definite; 9 of the 42 questions were found to have a negative eigenvalue. This error may be due to insufficient observations for the number of variables put into the factor analysis. Therefore, the analysis was split, performing an EFA on the items of HOSE and Emotional Resources, HOSE and Cognitive Resources and finally Resilience and Availability.

The first analysis consisted of all HOSE questions and the 8 emotional resource questions were added to the principal components analysis (29 questions in total). The resulting KMO was .487 (see table 5.8) which suggests is low sampling adequacy (Field, 2016, p877). Pallant (2016) suggests that the KMO should be .6 or above in order to have adequate sampling adequacy. Therefore, the size of the student sample was inadequate to perform an EFA on this number of items.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.487
Bartlett's Test of Sphericity	Approx. Chi-Square	813.388
	df	406
	Sig.	.000

Table 5.8 KMO And Bartletts Test Of Sphericity Results For EFA On HOSE And Emotional Resource Items.

The remaining EFA analyses all produced low KMO's suggesting an inadequate sampling size: HOSE and Cognitive Resources (26 items, KMO = .511), Resilience and Availability (21 items, KMO = .590) and Resilience and HOSE (21 items each. KMO = .531)

5.2.5 Regression Analysis

5.2.5.1 Psychological Safety

Regression analysis was performed to test the hypothesis that psychological resources predicted Psychological Safety. A standard linear regression analysis was performed using the Enter method and probability of F between .05 and.10 as recommended by Field (2016). Each variable was added to enable comparison. When Psychological Capital and

HOSE were used as independent predictors of Psychological Safety, there was little difference in variance explained (see table 5.9).

DV=Psychological Safety									
Method	**IV's**	**Adjusted R^2**	**Std. Error of the Estimate**	**R^2 Change**	**F Change**	**Sig. F Change**	**β**	**t**	**Sig**
Enter	**Psychological Capital**	**.177**	**1.858**	**.198**	**9.406**	**.004**	**.445**	**3.067**	**.004**
	HOSE	.165	1.872	.186	8.689	.005	.431	2.48	.005
	HOSE Resilience	.156	1.882	.199	4.596	.016	.325	1.616	.115
							.155	772	.445
	Psychological Capital CFLEX	.156	1.881	.199	4.608	.016	.466	2.654	.012
							-.038	-.214	.832
	HOSE CFLEX	.142	1.897	.186	4.234	.022	.425	2.516	.016
							.014	.084	.934
	HOSE Availability	.162	1.874	.205	4.783	.014	.287	1.360	.182
							.200	.949	.349
	Psychological Capital Availability	.164	1.872	.207	4.832	.014	.328	1.390	.173
							.150	.637	.528
	HOSE Availability Resilience	.141	1.898	.207	3.137	.037	.269	1.207	.235
							.158	.613	.544
							.071	.289	.775

Table 5.9 Results Of Regression Analysis On Psychological Safety for Student Data Using Enter Method

Psychological Capital and HOSE demonstrated small but significant variances in Psychological Safety. Psychological Capital accounted for 18% of the variance in Psychological Safety (R^2adj =.177, p=.004). HOSE accounted for 17% of the variance in Psychological Safety (R^2adj=.165, p=.005). This suggests that the inclusion of resilience in the Psychological Capital model accounts for only 1% of the variance. However, as Psychological Capital accounted for the greatest variance in Psychological Safety, a stepwise regression was performed on the variables of Psychological Capital to determine which components of Psychological Capital predicted Psychological Safety.

DV=Psychological Safety											
Metho	**IV's**	**Excluded Variables**	**Significant Variables**	**Adj. R^2**	**Std. Error of the Estimate**	**R^2 Δ**	**F Δ**	**Sig. F Δ**	**β**	**t**	**Sig**
Stepwise	Hope Optimism Selfefficacy Resilience	Hope Selfefficacy Resilience	Optimism	.235	1.791	.255	12.980	.001	.505	3.603	.001

Table 5.10 Results Of Regression Analysis on Psychological Safety for Student Data using Stepwise Method.

The Stepwise Regression demonstrated that only the Optimism component of Psychological Capital accounted for 24% of the variance in Psychological Safety (R^2adj =.235, p=.001) (See table 5.10).

This analysis suggests that for students, only Optimism is a predictor of Psychological Safety (see figure 5.1).

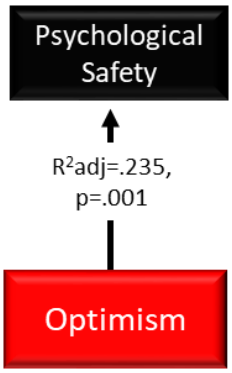


Figure 5.1 Diagram demonstrating the predictors of Psychological Safety for students.

A scatterplot shows a positive linear relationship between Psychological Safety and Optimism, suggesting that as hypothesised, the greater the psychological resource of optimism, the greater the Psychological Safety (R^2linear = .277; see figure 5.2).

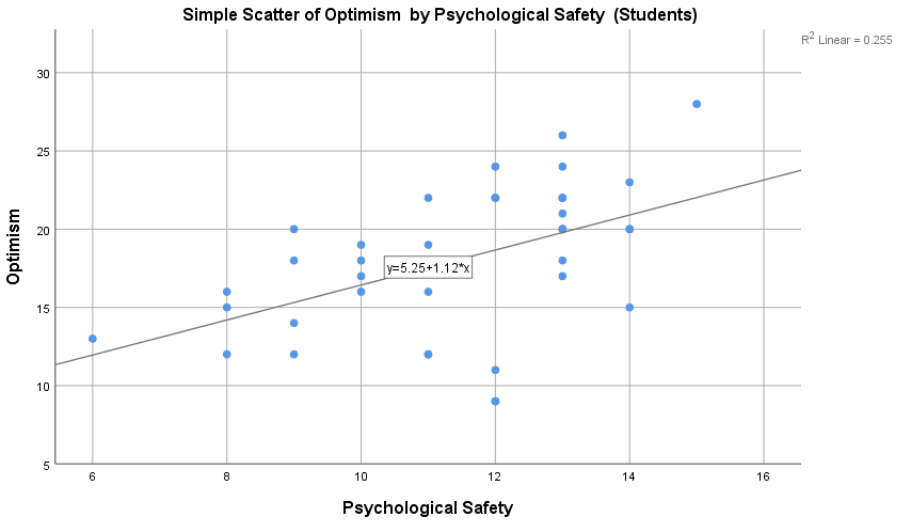


Figure 5.2 Scatterplot Showing The Relationship Between Emotional Resource And Psychological Safety For Students.

5.2.5.2 Resilience

The hypothesis that the HOSE model (Hope, Optimism and Self-Efficacy combined into one measure) would be a strong predictor of Psychological Safety with resilience as an output was unable to be tested due to the small data sample. However, correlation and regression analysis have indicated that resilience adds little statistically to HOSE. As resilience is hypothesised to be an output of psychological resources, a regression analysis was performed to determine the predictors of resilience with HOSE, Cognitive Flexibility and Availability as independent variables.

Regression analysis using the Enter method indicated that HOSE, Cognitive flexibility (CFLEX) and Availability were significant predictors of Resilience and that, in combination, these variables explained 67% of the variance in resilience (p<.000). (See table 5.11).

	DV= Resilience								
Method	**IV's**	**Adj R^2**	**Std. Error of the Estimate**	**R^2 Change**	**F Change**	**Sig. F Change**	**β**	**t**	**Sig**
Enter	HOSE	.452	2.638	.456	33.147	.000	.683	5.757	.000
	HOSE	.547	2.398	.570	24.545	.000	.507	4.133	.000
	CFLEX						.368	2.997	.005
	HOSE	**.669**	**2.049**	**.695**	**27.329**	**.000**	**.172**	**1.264**	**.214**
	CFLEX						**.286**	**.2671**	**.011**
	Availability						**.519**	**3.835**	**.000**

Table 5.11 Results Of Regression Analysis On Resilience for Student Data Using Enter Method

To determine which components of HOSE, Cognitive Flexibility and Availability were the strongest predictors of Resilience, a stepwise regression analysis using Resilience as the DV and the components of HOSE (Hope, Optimism, Self-efficacy), CFLEX (LMS and ACS) and Availability (Outside Support, Emotional Resources and Cognitive Resources) as the IV's, was performed. This indicated that cognitive resources account for 54% of the variance in resilience (R^2adj=.536 p <.000) and LMS, Emotional Resources and Self-efficacy accounted for a further 22% of the variance (see table 5.12).

DV= Resilience											
Metho	IV's	Excluded Variables	Significant Variables	Adj. R^2	Std. Error of the Estimate	R^2 Δ	F Δ	Sig. F Δ	β	t	Sig
Stepwise	Optimism Hope Self-Efficacy LMS ACS Out support Emo_resources Cog_Resources	Optimism Hope ACS Out support	Cognitive Resources	.536	2.427	.548	46.061	.000	.347	3.087	.004
			LMS	.677	2.023	.146	17.659	.000	.258	2.752	.009
			Emotional resources	.729	1.853	.056	8.089	.007	.270	2.538	.016
			Self-Efficacy	.754	1.768	.029	4.570	.040	.245	2.138	.040

Table 5.12 Results Of Regression Analysis On Resilience For Student Data Using Stepwise Method

The model of predictors of Psychological Safety and Resilience for students is shown in figure 5.3

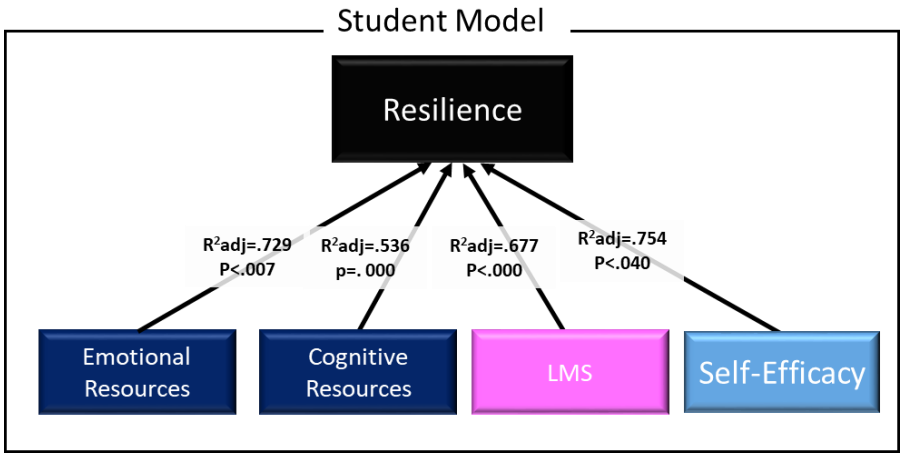


Figure 5.3 Diagram Representing the Predictors or Psychological Safety and Resilience for Students

Scatterplots show a positive linear relationship between resilience and its predictors, confirming the hypothesis that the greater the psychological resources the greater the levels of resilience (see figure 5.4).

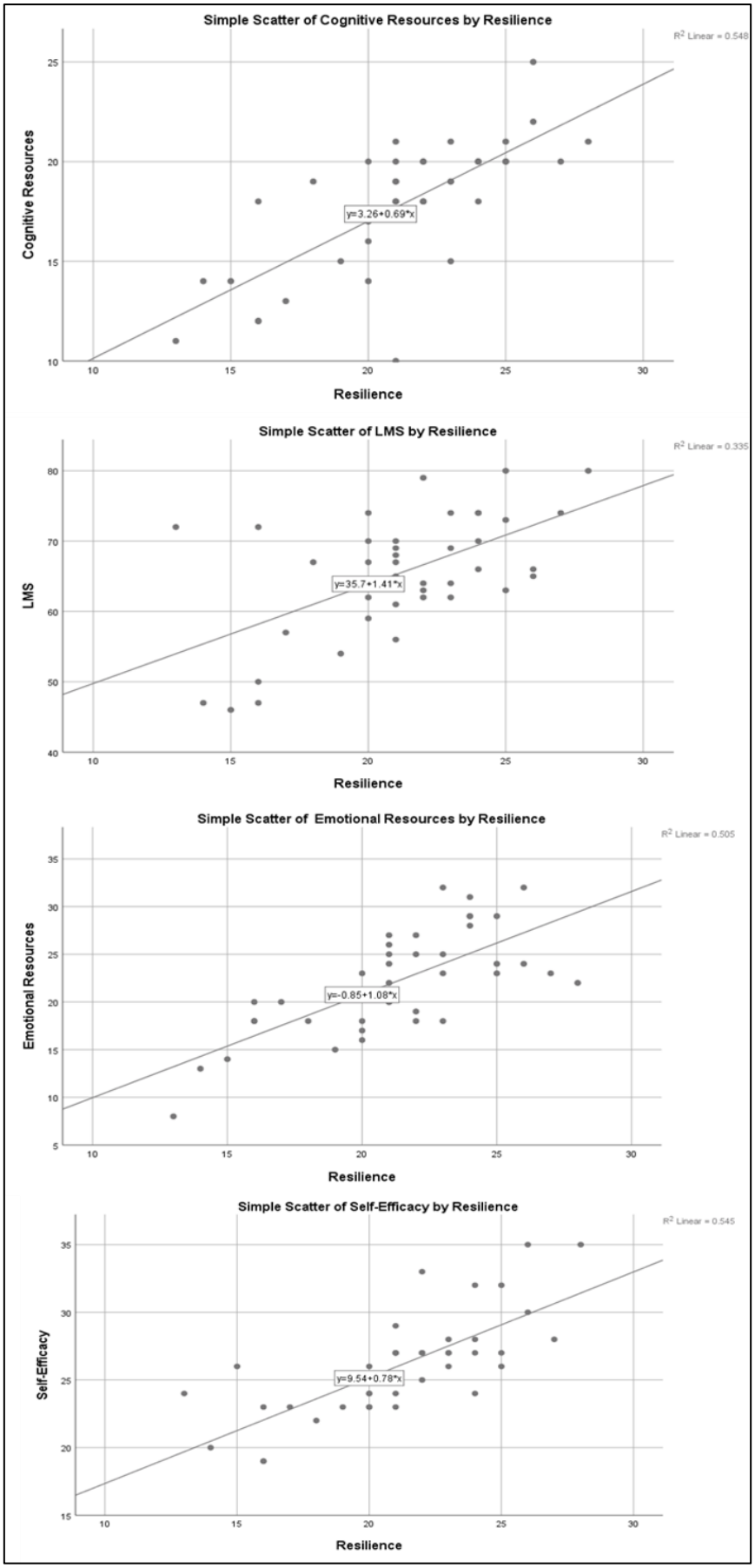


Figure 5.4 Scatterplots Showing The Relationship Between Resilience and its Predictors for Students.

5.2.6 Limitations

Clearly the limitation with this study is the low number of participants, achieving only 37% of the required numbers identified in the power analylsis in section 5.1. A post-hoc power analysis using a medium effect size (f2=0.15) and an α error probability of.05 indicated a power (1-β error probability) of 0.28. Power results less than .80 (Field, 2016) are considered insufficient for statistical significance. Therefore, the results of this study should be treated with caution.

5.2.7 Discussion

Despite the small cohort, this is the first study that has evaluated the individual psychological resources that contribute to Psychological Safety and it suggests that for students, Optimism accounts for 24% of the variance in Psychological Safety.

The regression analysis suggested that Resilience contributes little to Psychological Capital as the difference in variance between HOSE (with no measure of resilience) and Psychological Capital (includes resilience) was significant but small. When analysed as a DV, Cognitive and emotional resources predicted resilience as well as the openness element of cognitive flexibility and the self-efficacy component of HOSE. Combined they accounted for 75% of the variance in resilience. This supports extant research that resilience is a result of a combination of psychological factors (Egeland et al., 1993; Glantz & Sloboda, 2002; Sutcliffe & Vogus, 2003).

Although a small sample of those not in employment, it has raised questions for future research which are discussed in Chapter 7. Furthermore, the study had demonstrated the useability of the Psytookit software enabling the progression of the employee study. Thus, the next study focused on employee participants to determine whether the same patterns were found in a more mature working sample.

5.3 Employee Survey Analysis

The survey was administered as described in Chapter 3.

However, one question in the attentional control survey (ACS) needed rewording as this questionnaire was devised for a student population: “It is difficult for me to co-ordinate my attention between listening and writing/typing when taking notes during lectures” was amended to “It is difficult for me to co-ordinate my attention between listening and writing/typing when taking notes *in meetings”.*

5.3.1 Descriptives

Of the 160 completed data sets, participant ages ranged between 20-65 years (Mean= 35.86, SD = 9.973). The gender balance of respondents was 52.5% male and 93.8% of all respondents described themselves of white ethnicity. Participants were predominantly degree educated or higher (76.2%).

Although the IT industry was not specifically targeted, in fact this proved to be the largest industry type (34 respondents, 21.3%). Initially 25 respondents indicated that they worked in "Other" industries. However, some of these were reallocated, for example "Insurance" to Financial Services and "Oil & Gas" to Construction/ Engineering/Mining. A new category was created: Manufacturing, which 11 respondents had indicated as their industry. This resulted in 5 industries being combined in the "Other" category: Fashion, Childcare, Publishing, Logistics and Automation and a German participant individual who had written "Technischer Leiter" (technical manager) (See figure 5.5)

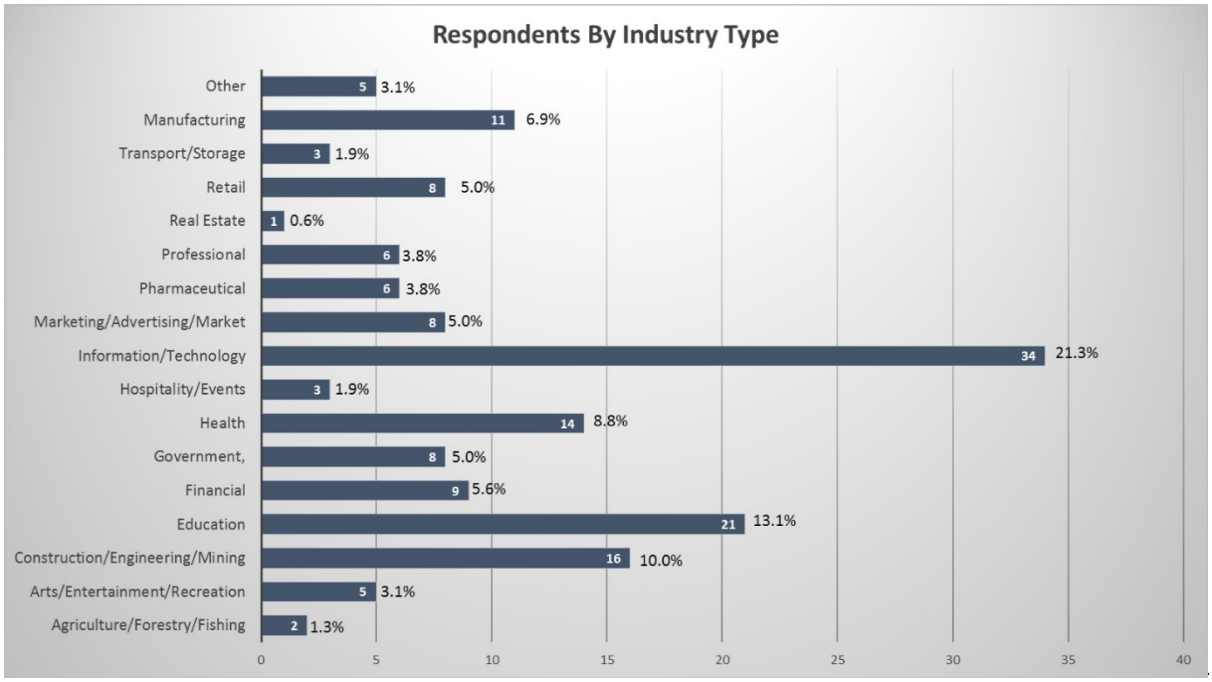


Figure 5.5 Bar Chart Indicating Percentage of Employee Respondents by Industry.

In response to the question asking how long the participant had worked in their industry, 30.6% had worked for more than 10 years, 26.3% between 1-3 years. The type of role represented was overwhelmingly Sales/Marketing both for those in the IT industry (78.8%) and those in other industries (21.3%). (See figure 5.6).

Not surprisingly, given the high proportion of participants from the IT industry, over 74% indicated that they were in at least one remote team (103 participants), short term team (31 participants) or

multiple teams (52 participants). Only 42 participants indicated that they work in none of these. Given the demographics of the participants, it appears to be representative the Knowledge Industry: experienced and qualified individuals, working in fast moving industries and primarily remote teams. However, there is poor ethnic diversity. This reflects the situation in the UK technology industry where only 15% of technology jobs are filled by those from Black, Asian and Ethnic minorities (ONS, National Population Survey, 2017 https://technation.io/insights/report-2018/jobs-and-skills/).

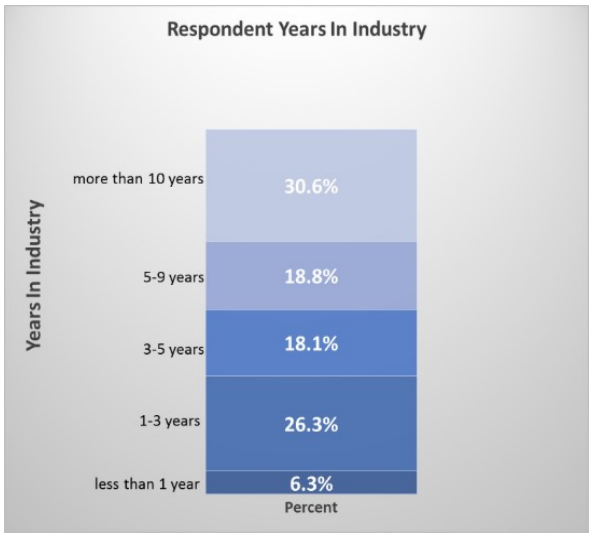


Figure 5.6 Percentage of Participants by Years in Industry

5.3.1 Test for Normality

As before, the variables of Psychological Capital (Hope+ Optimism+ Self-efficacy + Resilience) and HOSE (Hope+ Optimism+ Self-efficacy) and CFLEX (LMS + ACS) were checked for normality. All variables except one were within -0.5 and 0.5 of Skewness indicating the data was within the suggested range for symmetry. Similarly, Kurtosis for all variables fell within the -1 to +1 range (see table 5.13).

Descriptive Statistics (Employees)

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
Psychological Safety	160	27	78	54.41	10.734	-.507	.192	-.075	.381
Availability	160	38	84	63.04	8.250	-.225	.192	.226	.381
Resilience	160	13	30	22.41	2.851	-.078	.192	.669	.381
HOSE	160	46	92	69.77	9.400	-.038	.192	-.233	.381
Psychological Capital	160	64	122	92.18	11.418	-.120	.192	-.084	.381
LMS	160	49	92	70.51	8.410	.289	.192	-.143	.381
ACS	160	35	78	54.81	8.554	.186	.192	-.427	.381
Valid N (listwise)	160								

Table 5.13 Descriptive Statistics For Employee Data Variables

Scatterplots were used to identify potential outliers. Although six were identified, only one, participant 27, appeared as a consistent outlier across all variables and as an outlier in box-plots.

(See figure 5.7). Removal of this participant made insignificant impact on either correlations, skewness or kurtosis. Therefore, this participant remained in the dataset.

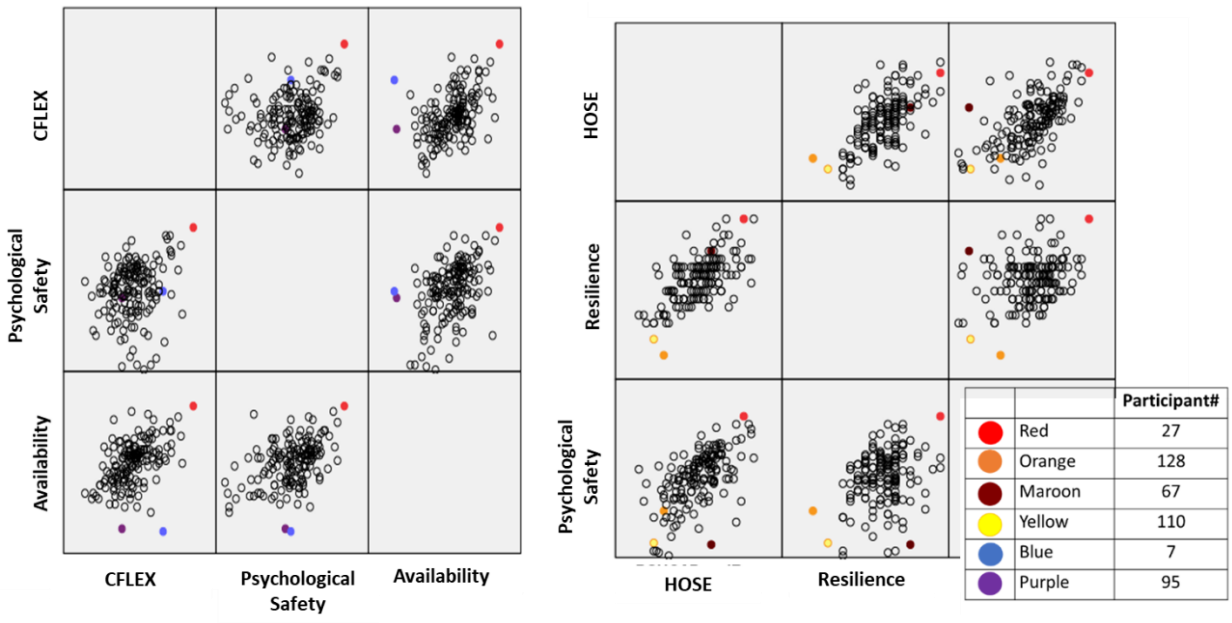


Figure 5.7 Scatterplots For Employee Data, Identifying Possible Outliers.

5.3.2. Correlation Analysis

This study sought to assess the relationships between Psychological Safety and psychological resources. A correlation analysis is a useful technique to test hypothesised relations between variables. Therefore, as an initial analysis, correlation was performed on the variables measuring Cognitive Flexibility (CFLEX), Task Switching results (AvTSPCDiff), Ravens Matrices Results (RAVENTOTAL), results from the Alternative Uses Test (ALTUSESTOTAL), Meaningfulness total, Psychological Safety totals, Availablity Totals and resilience totals. Both HOSE and Psychological Capital totals were input into the analysis. (see table 5.14). A Bonferroni calculation adjusted the p value to .005.

As with the student data, all correlations for the Ravens Matrice Scores and Task Switching were weak at best and in all but three cases statistically non-significant (see table 5.14). Therefore no further analysis took place.

The Alternative Uses correlations were statistically significant but correlations were weak. The maximum number of categories an individual identified was 14. Most participants identified between 3 and 6 categories (91, 57%). The mean was 4.92 (SD=2.548).

Correlations (Employees)

		Psychological Safety	CFLEX	Availability	Resilience	Psychological Capital	HOSE	Meaningful-ness	AvTSPCDiff	RAVENS
CFLEX	Pearson Correlation	.170*								
	Sig. (2-tailed)	.032	-							
	N	160								
Availability	Pearson Correlation	.413**	.485**							
	Sig. (2-tailed)	.000	.000	-						
	N	160	160							
Resilience	Pearson Correlation	.281**	.511**	.524**						
	Sig. (2-tailed)	.000	.000	.000	-					
	N	160	160	160						
Psychological Capital	Pearson Correlation	.535**	.583**	.723**	.770**					
	Sig. (2-tailed)	.000	.000	.000	.000	-				
	N	160	160	160	160					
HOSE	Pearson Correlation	.565**	.553**	.720**	.632**	.981**				
	Sig. (2-tailed)	.000	.000	.000	.000	.000	-			
	N	160	160	160	160	160				
Meaningful-ness	Pearson Correlation	.644**	.372**	.435**	.427**	.605**	.605**			
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	-		
	N	160	160	160	160	160	160			
AvTSPCDiff	Pearson Correlation	.036	-.037	-.073	-.020	-.014	-.011	.019		
	Sig. (2-tailed)	.652	.648	.361	.808	.859	.887	.817	-	
	N	158	158	158	158	158	158	158		
RAVENS	Pearson Correlation	.039	.045	.053	.049	.067	.067	-.044	-.164*	
	Sig. (2-tailed)	.628	.575	.505	.534	.398	.402	.581	.040	-
	N	160	160	160	160	160	160	160	158	
ALTUSESTOTAL	Pearson Correlation	-.080	.120	.132	.204**	.152	.123	.124	-.185*	.105
	Sig. (2-tailed)	.316	.131	.097	.010	.055	.122	.117	.020	.188
	N	160	160	160	160	160	160	160	158	160

Bonferroni adjusted p=.005 **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 5.14 Correlations (Cronbach Alpha) Between Variables For Employee Data

The measure of Psychological Safety, correlated significantly and positively with all psychological resources and with Meaningfulness. This suggests that both intrinsic and extrinsic resources contribute to Psychological Safety. Interestingly, the correlation between Psychological Safety and HOSE is very slightly stronger than the full Psychological Capital variable that includes resilience (r= .565 vs r=.535, p<.000). Again, correlations with psychological resources and HOSE did not differ significantly from the correlations with Psychological Capital, suggesting a low contribution of Resilience to this factor (see table 5.15).

	HOSE	PSYCAP
Meaningfulness	r=.605	r=.605
Psychological Safety	r=.565	r=.535
Availability	r=.720	r=.723
CFLEX	r=.553	r=.583

p<.000

Table 5.15 Comparison Of Correlations Between HOSE And Psychological Capital With Meaningfulness, Psychological Safety, Availability And Cognitive Flexibility.

Once again, Availability and HOSE were highly and positively correlated (r=.720, p <.000) suggesting a strong linear relationship between them.

As with the student data, Psychological Safety and Resilience was weakly correlated (r=.281, p<.000). However, resilience had a strong positive correlation with HOSE (r=.632, p < .000), Availability (r=.524, p<.000) and CFLEX (r=.511, p<.000) suggesting that there may be a relationship between the psychological resources of Availability, LMS, ACS and HOSE and resilience.

A further correlation analysis was performed on the sub components of the cognitive resource variables; HOSE, Availability, resilience and Psychological Safety. The experiment data was excluded. Psychological Safety had the strongest correlation with Hope (r=.551, p<.000) and Optimism (r=.543, p<.000). (See table 5.16).

Correlations – Variable Sub Components (Employees)

		Psychological Safety	Hope	Optimism	Self-Efficacy	Resilience	Self-con,	Outside support	Cognitive Resources	Emotional Resources	LMS	ACS
Hope	Pearson Correlation	.551**										
	Sig. (2-tailed)	.000	-									
	N	160										
Optimism	Pearson Correlation	.543**	.604**									
	Sig. (2-tailed)	.000	.000	-								
	N	160	160									
Self-Efficacy	Pearson Correlation	.319**	.590**	.476**								
	Sig. (2-tailed)	.000	.000	.000	-							
	N	160	160	160								
Resilience	Pearson Correlation	.281**	.560**	.408**	.630**							
	Sig. (2-tailed)	.000	.000	.000	.000	-						
	N	160	160	160	160							
Self-Consciousness	Pearson Correlation	-.141	-.274**	-.252**	-.284**	-.251**						
	Sig. (2-tailed)	.076	.000	.001	.000	.001	-					
	N	160	160	160	160	160						
Outside Support	Pearson Correlation	.314**	.433**	.394**	.345**	.287**	-.029					
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.719	-				
	N	160	160	160	160	160	160					
Cognitive Resources	Pearson Correlation	.323**	.580**	.469**	.590**	.594**	-.304**	.334**				
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	-			
	N	160	160	160	160	160	160	160				
Emotional Resources	Pearson Correlation	.378**	.556**	.649**	.495**	.460**	-.422**	.354**	.553**			
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	-		
	N	160	160	160	160	160	160	160	160			
LMS	Pearson Correlation	.183*	.448**	.329**	.578**	.426**	-.052	.194*	.483**	.329**		
	Sig. (2-tailed)	.021	.000	.000	.000	.000	.510	.014	.000	.000	-	
ACS	Pearson Correlation	.100	.343**	.214**	.425**	.426**	-.310**	.094	.452**	.401**	.388**	
	Sig. (2-tailed)	.206	.000	.007	.000	.000	.000	.237	.000	.000	.000	-

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 5.16 Correlations (Cronbach Alpha) Between Sub Variables For Employee Data

The strong correlation between Availability and HOSE appeared to be a result of cognitive resources and emotional resources being highly positively correlated with all the variables of HOSE (see table 5.17).

The correlation between Resilience and HOSE was predominately driven by self-efficacy (r=.630, p<.000) and hope (r=.560, p<.000). Resilience also was highly correlated with the cognitive resources component of Availability (r=.594, p<.000). There was a moderate (and identical) correlation between resilience and the two CFLEX components of openness (LMS: r=.426, p<.000) and attentional control (ACS: r=.426, p<.000).

		SE	OPT	HOPE
Cognitive Resources	Pearson Correlation	.590**	.469**	.580**
	Sig. (2-tailed)	.000	.000	.000
	N	160	160	160
Emotional Resources	Pearson Correlation	.495**	.649**	.556**
	Sig. (2-tailed)	.000	.000	.000
	N	160	160	160

Table 5.17 Correlations Between Components Of HOSE And Cognitive And Emotional Resources

5.3.3 Confirmatory Factor Analysis

Hypothesis 3 challenges Luthans' Psychological Capital model, arguing that resilience should be excluded from the model. As with the original Psychological Capital model (2007a), the CFA was performed on the data from questions for hope, optimism, self-efficacy and resilience with AMOS version 22 using Maximum Likelihood extraction method. The SRMR and CFI were both measured, reflecting the analysis used by Luthans et al. (2007a). The acceptable level for SRMR varies from below .05 (Hooper, Coughlan & Miller, 2008) to below .08 (Hu & Bentler, 1999; Kline, 2005). The closer to zero the better the fit. In contrast, for CFI the closer the value to 1, the better the fit. Acceptable levels are cited as above .95 (Hu & Bentler, 1999), .90 (Kline, 2005) or .80 (Bollen, 1989, in Moss, 2016). Luthans et al., (2007a) also used RMSEA, however, for smaller samples such as this, the Chi-squared statistic is considered a more acceptable measure (Kenny, 2015).

Mirroring Luthans et al.'s (2007a) analysis, a CFA was performed on the four components of Psychological Capital model including resilience. This demonstrated a fit of $\chi 2 = 12.732$, (2/.002), SRMR of .0423 and CFI of .954. Both the CFI and SRMR fell within acceptable levels (see figure 5.8).

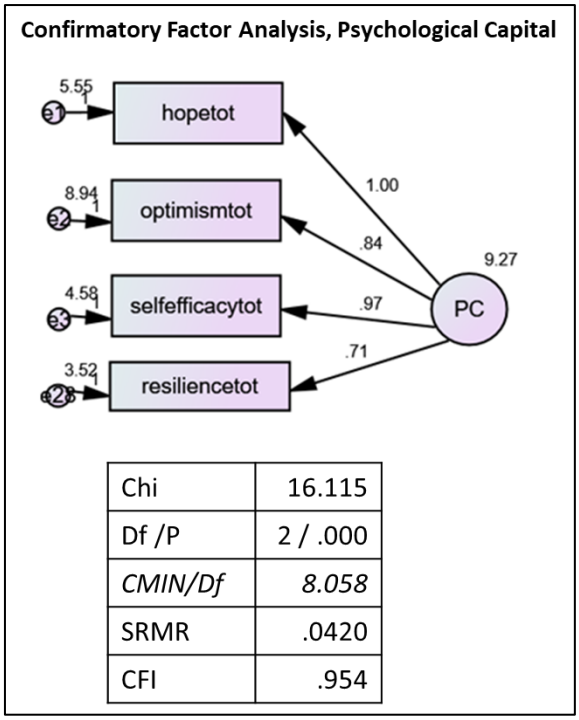


Figure 5.8 Results of Confirmatory Factor Analysis on Psychological Capital Components (Employee Data)

The model was run again, this time placing resilience as a separate construct. This proved to be a stronger fit model, with a higher Chi-square (χ2 = 76.750, (26/.000), CFI = .894, SRMR = .0640,) (see figure 5.9).

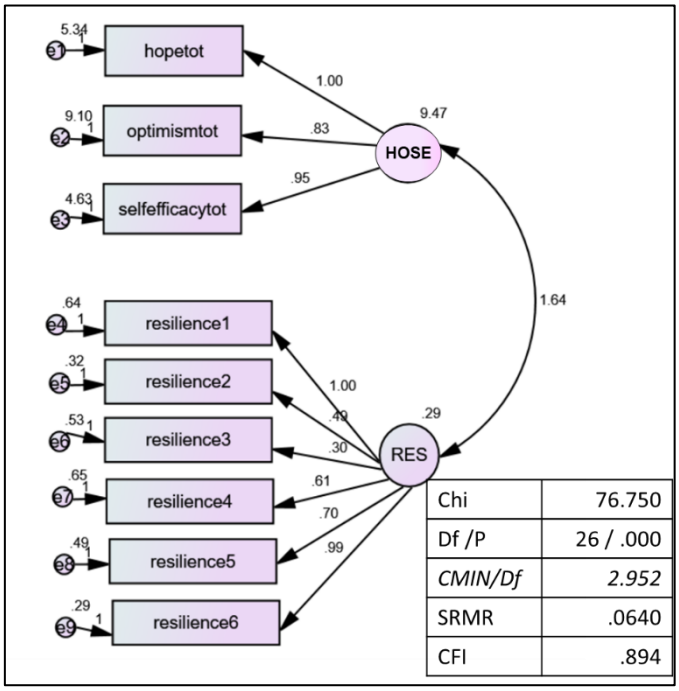


Figure 5.9 Results of Confirmatory Factors Analysis On Three Components Of Psychological Capital: Hope, Optimism And Self-Efficacy (HOSE), With Resilience As A Separate Variable.

Hypothesis 5 was that Cognitive Flexibility should be included as part of the new HOSE model was tested, again using CFA. The addition of ACS and LMS to HOSE increased the strength of the model ($\chi 2$ = 21.378, (5/.001), CFI = .933, SRMR = .0543) (see figure 5.10)

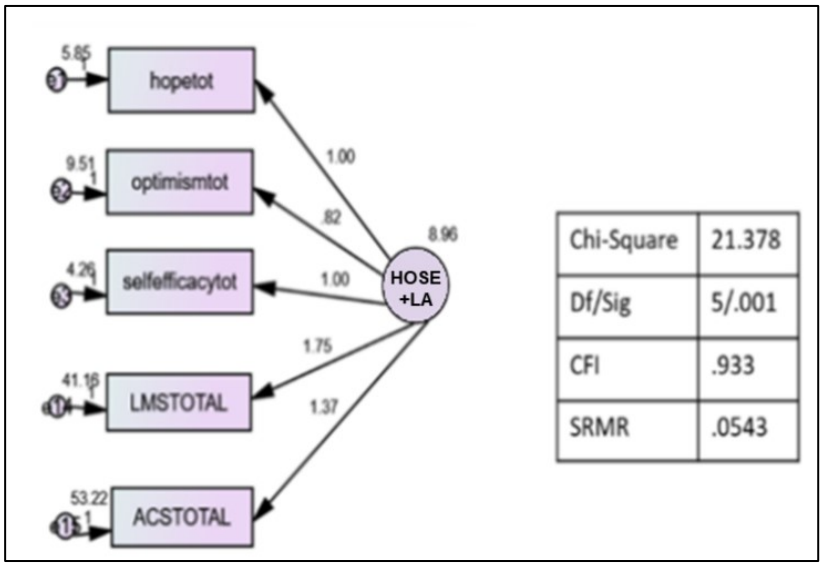


Figure 5.10 Results of Confirmatory Factor Analysis on the Three Variables of HOSE and Two Cognitive Flexibility Variables: (LMS and ACS)

The results of this CFA suggested that the model HOSE plus LMS and ACS is stronger model than Psychological Capital model.

5.3.4 Exploratory Factor Analysis

The correlation analysis had shown strong relationships between some variables, specifically the relationship between Availability and HOSE (r=.720, p=.001) and Resilience's correlation with the HOSE component of self-efficacy (r=.630, p<.000), hope (r=.560, p<.000) and cognitive resources (r=.590, p<.000)

Further analyses took place to provide more information on the relationship between variables, specifically whether they were measuring separate constructs. To do so, an exploratory factor analysis was performed. To ensure the data were measuring separate constructs, an exploratory factor analysis (EFA) was performed using principal components analysis. Given the strength of the correlations between the variables, direct oblimin was used as the rotation method.

An EFA was conducted to determine whether the strong correlation between Availability and HOSE was the result of these questions measuring one factor. The questions from each variable were added (44 questions in total) to the EFA. This produced a KMO Measure of .862, suggesting the data was suitable for rotation (see table 5.18)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.862
Bartlett's Test of Sphericity	Approx. Chi-Square	3621.300
	df	946
	Sig.	.000

Table 5.18 KMO And Bartletts Test Of Sphericity Results For EFA On Availability and HOSE Items for Employee Data.

The EFA produced an 11-factor model (see table 5.19) with a break at factor 4, accounting for 50% of the variance (see figure 5.11).

Four Cognitive Resource items loaded onto factor 1. Factor 2 contained all of the Self-efficacy items. Factor 3 consisted of the three self-consciousness questions. The four agency questions in hope and one reversed scored optimism question loaded onto factor 4. (See table 5.19). Overall, the outputs of the EFA suggest that the questionnaires are measuring separate constructs.

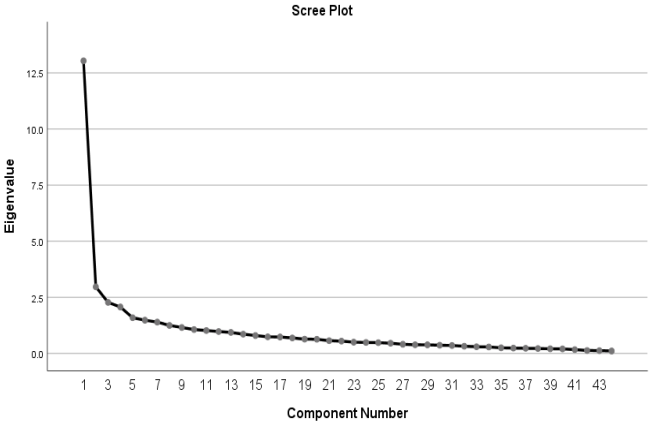


Figure 5.11 Scree Plot from EFA on the sub components of HOSE and Availability.

Structure Matrix

	Component										
	1	2	3	4	5	6	7	8	9	10	11
% Variance	29.631	6.741	5.169	4.702	3.613	3.363	3.172	2.834	2.627	2.419	2.318
CogResQ1	**.719**	.377	-.138	-.289	.223	.202	.216	.195	-.421	-.435	-.145
CogResQ2	**.758**	.350	-.295	-.237	.142	.250	.259	.267	-.174	-.090	-.331
CogResQ3	**.676**	.298	-.318	-.346	.430	.218	.165	.096	-.230	-.539	-.148
CogResQ4	.455	.250	-.207	-.380	.348	.278	.055	.021	-.331	**-.550**	-.038
CogResQ5	**.708**	.333	-.001	-.393	.463	.073	.127	.108	-.085	-.172	-.204
EmoResQ1	.319	.246	-.341	-.266	**.616**	.418	-.086	.125	-.225	-.210	.001
EmoResQ 2	.334	.334	-.176	-.242	**.737**	.214	.183	.214	-.218	-.284	-.092
EmoResQ 3	.230	.262	-.366	-.302	**.623**	.278	.534	.155	-.250	-.050	-.285
EmoResQ 4	.187	.273	-.128	-.415	**.657**	.323	.171	-.112	-.383	-.138	.019
EmoResQ 5	.351	.253	-.210	-.381	**.696**	.282	.424	.040	-.397	-.120	-.068
EmoResQ 6	.255	.172	-.332	-.380	**.751**	.223	.425	-.067	-.329	-.158	-.030
EmoResQ 7	.171	.244	-.435	-.460	**.630**	.373	.417	.227	-.096	-.061	.023
EmoResQ 8	.102	.199	-.381	-.269	**.719**	.245	.324	.195	-.099	-.172	-.184
OutSupQ1	.096	.179	-.081	-.178	.148	.314	.094	.024	**-.740**	.025	-.238
OutSupQ2	.174	.196	.050	-.309	.225	.162	.110	.161	**-.768**	-.158	.040
Selfconscq1	-.152	-.017	**.850**	.074	-.109	-.114	-.170	-.051	.061	.043	-.067
Selfconscq2	-.068	-.182	**.811**	.193	-.350	-.087	-.103	-.123	-.009	.234	.000
Selfconscq3	-.194	-.250	**.715**	.245	-.312	-.326	.195	-.071	.048	.055	.012
HopeQ1	.302	.239	-.305	-.277	.253	.265	.182	.238	-.471	**-.495**	-.071
HopeQ2	.242	.203	-.136	**-.824**	.300	.262	.067	.143	-.223	-.197	-.008
HopeQ3	.244	.337	.006	-.404	.096	.324	.090	**.740**	-.221	-.177	-.165
HopeQ4	.419	.361	-.174	**-.811**	.259	.280	.208	.208	-.254	-.114	-.113
HopeQ5	.265	.234	-.286	**-.672**	.311	.365	.169	.407	-.397	-.226	.038
HopeQ6	.182	.268	-.140	**-.753**	.360	.247	.202	.117	-.387	-.253	-.134
OptimismQ1	.088	.261	-.249	-.531	.390	**.680**	.148	-.056	-.273	-.168	.184
OptimismQ2	.150	.172	-.153	-.054	.169	.133	**.776**	.150	-.192	-.304	-.030
OptimismQ3	.198	.283	-.206	-.545	.477	**.747**	.152	.134	-.316	-.077	.153
OptimismQ4	.362	.232	-.163	**-.618**	.286	.535	.287	.056	-.353	-.131	.167
OptimismQ5	.167	.112	.015	-.231	.309	.004	**.755**	-.022	-.077	.065	-.035
OptimismQ6	.026	.217	.010	-.218	.261	**.772**	-.001	.191	-.240	-.167	-.053
Resilience1	.199	.334	-.357	-.290	.315	.167	.216	**.573**	-.274	-.337	-.062
Resilience 2	-.035	.491	.143	-.271	.232	.114	.073	-.053	-.153	-.426	**-.519**
Resilience 3	.251	.109	.023	-.061	.070	.053	.041	.112	-.135	-.098	**-.812**
Resilience 4	.264	.057	-.280	-.010	-.034	**.644**	.075	.181	-.215	-.209	-.324
Resilience 5	.217	.382	-.120	-.123	.118	.281	.154	**.386**	-.027	-.703	-.228
Resilience 6	.316	.461	-.225	-.540	.281	.287	.207	.058	-.127	**-.654**	-.159
selfefficacy1	.202	**.706**	-.114	-.216	.222	.275	.049	.570	-.116	-.171	-.115
selfefficacy2	.117	**.515**	-.258	-.531	.220	.262	-.007	.151	-.181	-.027	-.061
selfefficacy3	.267	**.538**	-.118	-.387	.347	.166	.081	.379	-.171	-.088	-.266
selfefficacy4	.336	**.745**	-.156	-.231	.252	.183	.202	.103	-.323	-.302	-.034
selfefficacy5	.416	**.656**	-.019	-.320	.163	.224	.152	.107	-.424	-.289	-.151
selfefficacy6	.206	**.805**	-.141	-.141	.171	.157	.203	.242	-.121	-.239	-.166
selfefficacy7	.416	**.559**	-.319	-.473	.214	.376	.382	-.037	-.194	-.286	-.056
selfefficacy8	.162	**.724**	-.142	-.329	.283	.178	-.059	.215	-.091	-.321	-.302

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

Table 5.19 Structure Matrix From Exploratory Factor Analysis Using Components Of Availability: Cognitive Resources (CogRes), Emotional Resources (EmoRes), Outside Support (OutSup) and Self-Consciousness (Selfconsc) and HOSE Components: Hope, Optimism, Resilience and Self-Efficacy

5.3.5 Regression Analysis

5.3.5.1 Psychological Safety

Hypothesis 1 was that those with more psychological resources would have higher Psychological Safety, Hypothesis 4 was that those with more psychological resources would have higher levels of Resilience. To explore the resources that predicted Psychological Safety and Resilience regression analyses were performed.

As with the student data, a linear regression analysis was conducted using the Enter method and probability of F between .05 and.10 was used, as recommended by Field (2016).

Using Psychological Safety as the dependant variable, a stepwise regression analysis was performed on the high level variables of CLFEX, Meaningfulness, Availability, HOSE and Resilience.

DV=Psychological Safety											
Method	**IV's**	**Excluded Variables**	**Significant Variables**	**Adj. R^2**	**Std. Error of the Estimate**	**R^2 Δ**	**F Δ**	**Sig. F Δ**	**β**	**t**	**Sig**
Stepwise	CFLEX Meaningfulness Availability HOSE Resilience	Availability Resilience	Meaningful -ness	.411	12.946	.414	111.807	.000	.452	6.401	.000
			HOSE	.479	12.170	.071	21.782	.000	.432	5.494	.000
			CFLEX	.500	11.922	.024	7.619	.006	-.186	-2.760	.006

Table 5.20 Results Of Stepwise Regression For Psychological Safety Using Cognitive Flexibility, Meaningfulness, Availability, HOSE And Resilience Variables

This showed that the external resource of Meaningfulness is still the primary predictor of Psychological Safety, accounting for 41% of the variance (R2adj=.411, p<.000). (See table 5.20).

The regression analysis was repeated using the intrinsic resources of HOSE and CFLEX (see table 5.21).

DV=Psychological Safety									
Method	**IV's**	**Adjusted R^2**	**Std. Error of the Estimate**	**R^2 Change**	**F Change**	**Sig. F Change**	**β**	**t**	**Sig**
Enter	HOSE	.336	8.746	.349	27.822	.000	.682	8.679	.000
	LMS						-.139	-1.766	.079
	ACS						-.110	1.524	.129

Table 5.21 Results Of Regression Analysis On Psychological Safety For Employee Data Using Enter Method

In order to determine which of the HOSELA components best predicted Psychological Safety, a stepwise regression was then performed using the sub-components of HOSE, LMS and ACS (see table 5.22)

	DV=Psychological Safety										
Method	**IV's**	**Excluded Variables**	**Significant Variables**	**Adj. R^2**	**Std. Error of the Estimate**	**R^2 Δ**	**F Δ**	**Sig. F Δ**	**β**	**t**	**Sig**
Stepwise	Optimism Self efficacy Hope LMS ACS	Self-Efficacy LMS ACS	Hope	.299	8.985	.304	68.912	.000	.351	4.430	.000
			Optimism	.365	8.552	.069	17.403	.000	.331	4.172	.000

Table 5.22 Results Of Regression Analysis On Psychological Safety For Employee Data Using Stepwise Method.

This indicated that Hope accounted for 30% of the variance in Psychological Safety, with Optimism adding a further 7% (R^2adj=.365, p<.000).

Self-Efficacy and the cognitive flexibility variables did not predicate any further variance in Psychological Safety.

This suggests that for Employees, the Psychological Capital components of Hope and Optimism are the key predictors of Psychological Safety (see figure 5.12). .

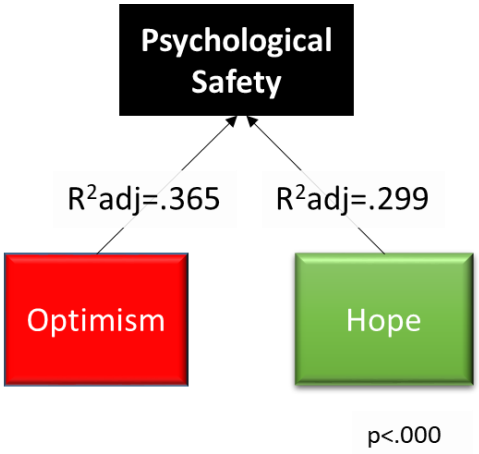


Figure 5.12 Diagram Illustrating The Predictors Of Psychological Safety For Employees.

5.3.5.2 Resilience

Extant research suggests that resilience is a consequence of multiple resources (Bonanno, 2004; Cicchetti & Garmezy, 1993; Egeland et al., 1993; Glantz & Sloboda, 2002; Masten et al., 1990; McCubbin, 2001; Rutter, 1987; Staudinger et al., 1993; Van Den Heuvel et al., 2010). Now removed from the Psychological Capital model, in order to identify which psychological resources predicted Resilience, a regression analysis was performed using Resilience as the DV.

Regression Analysis using the Enter method demonstrated that HOSELA accounted for 43% of the variance in Resilience (R^2adj=.431, p <.000) (see Table 5.23)

DV= Resilience									
Method	**IV's**	**Adjusted R^2**	**Std. Error of the Estimate**	**R^2 Change**	**F Change**	**Sig. F Change**	**β**	**t**	**Sig**
Enter	HOSE, LMS ACS	.431	2.151	.441	41.097	.000	.516	7.092	.000
							.074	1.015	.311
							.197	2.949	.004

Table 5.23 Results Of Regression Analysis On Resilience For Employee Data Using Enter Method

A stepwise regression on the HOSE, LMS and ACS variables resulted in the exclusion of LMS. The Availability variable was added to a stepwise regression analysis, but was also excluded demonstrating that HOSE and ACS accounted for 43% of the variance in resilience (see table 5.24).

DV=Resilience											
Method	**IV's**	**Excluded Variables**	**Significant Variables**	**Adj. R^2**	**Std. Error of the Estimate**	**R^2 Δ**	**F Δ**	**Sig. F Δ**	**β**	**t**	**Sig**
Stepwise	HOSE LMS ACS	LMS	HOSE	.396	2.217	.399	105.045	.000	.550	8.464	.000
			ACS	.431	2.152	.038	10.725	.001	.213	3.275	.001
	HOSE Availability LMS ACS	LMS Availability	HOSE	.396	2.217	.399	105.045	.000	.550	8.464	.000
			ACS	.431	2.152	.038	10.725	.001	.213	3.275	.001

Table 5.24 Results Of Regression Analysis On Resilience For Employee Data Using Stepwise Method.

In order to test which psychological resources best predicted resilience, the components of HOSE, LMS and ACS were added to a stepwise regression analysis (see table 5.25).

DV=Resilience											
Method	**IV's**	**Excluded Variables**	**Significant Variables**	**Adj. R^2**	**Std. Error of the Estimate**	**R^2 Δ**	**F Δ**	**Sig. F Δ**	**β**	**t**	**Sig**
Stepwise	LMS ACS Hope Optimism Selfefficacy	LMS Optimism	Selfefficacy	.393	2.222	.397	103.944	.000	.404	5.368	.000
			Hope	.444	2.126	.054	15.491	.000	.265	3.651	.000
			ACS	.462	2.091	.021	6.320	.013	.163	2.514	.013

Table 5.25 Results Of Regression Analysis On Resilience For Employee Data Using Stepwise Method and Components of HOSE, LMS and ACS.

The strongest predictor of resilience for employees was self-efficacy (R^2adj = .393, p<.000), with hope adding a further 5% and ACS a further 2%. Thus the model for employees is shown in figure 5.13.

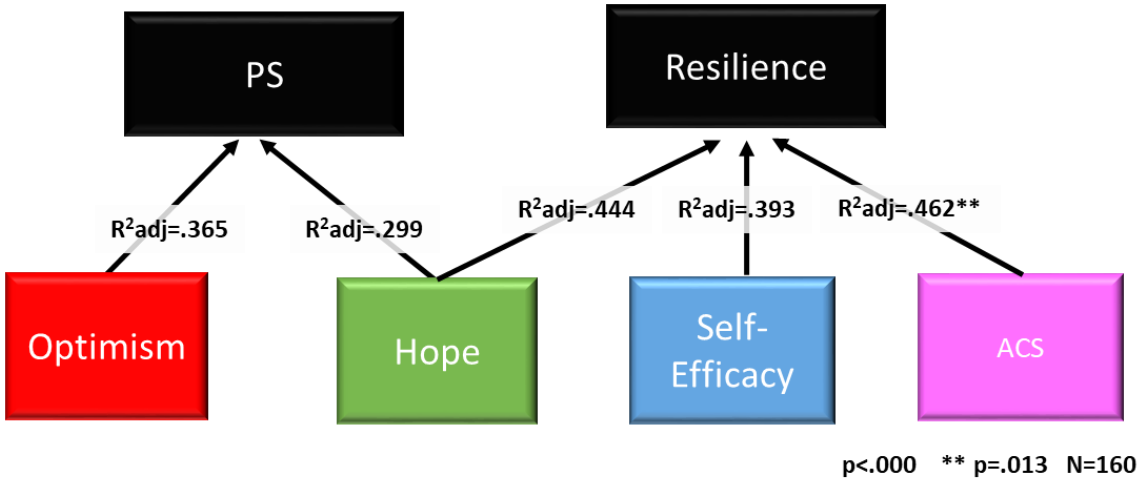


Figure 5.13 Diagram Illustrating The Predictors Of Psychological Safety And Resilience For Employees.

5.3.6 Predictors of HOSE & ACS

Data modelling had indicated that the Psychological Capital model was stronger with the inclusion of LMS and ACS. And yet LMS was not shown as a significant predictor for Psychological Safety or resilience and ACS accounted for only 2% of the variance in Resilience. However as shown in section 5.2. 5.1 correlations did suggest positive linear relationships between each of the resource variables and Hope, Optimism and Self-efficacy and a negative linear relationship with self-consciousness as predicted. This confirms the resource model theories, that those with higher resources have higher hope, optimism and self-efficacy (Hobfoll, 2002; Holahan & Moos, 1991; Holahan et al.,., 1999; Lazarus & Folkman, 1987).To further test this a stepwise regression analysis was run on each of the HOSE variables as DV's and the remaining psychological resources as independent variables.

DV = Hope											
Method	IV's	Excluded Variables	Significant Variables	Adj. R^2	Std. Error of the Estimate	R^2 Δ	F Δ	Sig. F Δ	β	t	Sig
Stepwise	Optimism Self-Efficacy Emo.Resources Cogresoruces Self-con LMS ACS	Emo.Resources Cog.resoruces LMS ACS Selfcon	Optimism	.361	3.066	.365	90.807	.000	.318	4.794	.000
			Self-Efficacy	.476	2.775	.118	35.856	.000	.250	3.526	.000
			Cognitive Resources	.513	2.677	.039	12.676	.000	.236	3.341	.000

Table 5.26 Results Of Stepwise Regression Analysis On Hope Using The Independent Variables Of Optimism, Self-Efficacy, Emotional Resources (Emoresources), Cognitive Resources (Cogresources), Self-Consciousness (Self-Con), LMS And ACS

Using Hope as the DV, a stepwise regression analysis was performed using the remaining intrinsic psychological resources as IV's: Optimism and Self-efficacy, cognitive resources, emotional

resources, self-consciousness, ACS and LMS. In total optimism, self-efficacy and cognitive resources predicted 51% of the variance in Hope (R^2adj=.513, p<.000). (See table 5.26).

The variables of emotional resources and hope predicted 50% of the variance in Optimism (R2adj=.501, p<.000). (See table 5.27).

DV = Optimism												
Method	IV's	Excluded Variables	Significant Variables	Adj. R^2	Std. Error of the Estimate	R^2 Δ	F Δ	Sig. F Δ	β	t	Sig
Stepwise	Hope Self Efficacy Emo.Resources Cog.resoutces Self-con LMS ACS	Self Efficacy Cog.resources Self-con LMS ACS	Emotional Resources	.418	2.889	.422	115.186	.000	.454	6.731	.000
			Hope	.501	2.675	.086	27.248	.000	.352	5.220	.000

Table 5.27 Results of Stepwise Regression Analysis on Optimism Using the Independent Variables Of Hope, Self-Efficacy, Emotional Resources (Emoresources), Cognitive Resources (Cogresources), Self-Consciousness (Self-Con), LMS and ACS

For self-efficacy, there were four predictors accounting for 52% of the variance (R2adj=.515, p<.000) (see table 5.28).

DV = Self Efficacy											
Method	IV's	Excluded Variables	Significant Variables	Adj. R^2	Std. Error of the Estimate	R^2 Δ	F Δ	Sig. F Δ	β	t	Sig
Stepwise	Hope Optimism Emo.Resources Cog.Resources Self-con LMS ACS	Optimism Emo.Resources ACS	Hope	.344	2.892	.348	84.345	.000	.270	3.825	.000
			LMS	.465	2.612	.124	36.699	.000	.339	5.157	.000
			Cognitive Resources	.505	2.512	.042	13.629	.000	.233	3.183	.000
			Self-consciousness	.515	2.487	.013	4.175	.043	-.121	-2.043	.43

Table 5.28 Results Of Stepwise Regression Analysis On Self-Efficacy Using The Independent Variables Of Hope, Optimism, Emotional Resources (Emoresources), Cognitive Resources (Cogresources), Self-Consciousness (Self-Con), LMS And ACS

Finally, Cognitive Resources and Self-efficacy accounted for 23% of the variance in ACS. (See table 5.29).

DV = ACS											
Method	IV's	Excluded Variables	Significant Variables	Adj. R^2	Std. Error of the Estimate	R^2 Δ	F Δ	Sig. F Δ	β	t	Sig
Stepwi	Hope Optimism Self-Efficacy	Hope Optimism	Cognitive resources	.199	7.565	.204	40.510	.000	.308	3.586	.000

	Emo.Resources Cog.Resources Self-con LMS	Emo.Resources Selfcon LMS	Self-efficacy	.233	7.492	.038	7.975	.005	.243	2.824	.005

Table 5.29 Results Of Stepwise Regression Analysis On ACS Using The Independent Variables Of Hope, Optimism, Emotional Resources (Emoresources), Cognitive Resources (Cogresources), Self-Consciousness (Self-Con) and LMS

As before, scatterplots were run to illustrate relationships between these variables. A positive linear relationship was indicated between all variables with the exception, as expected, of self-consciousness, which showed a negative linear relationship with self-efficacy (see figures 5.145 – 5.17).

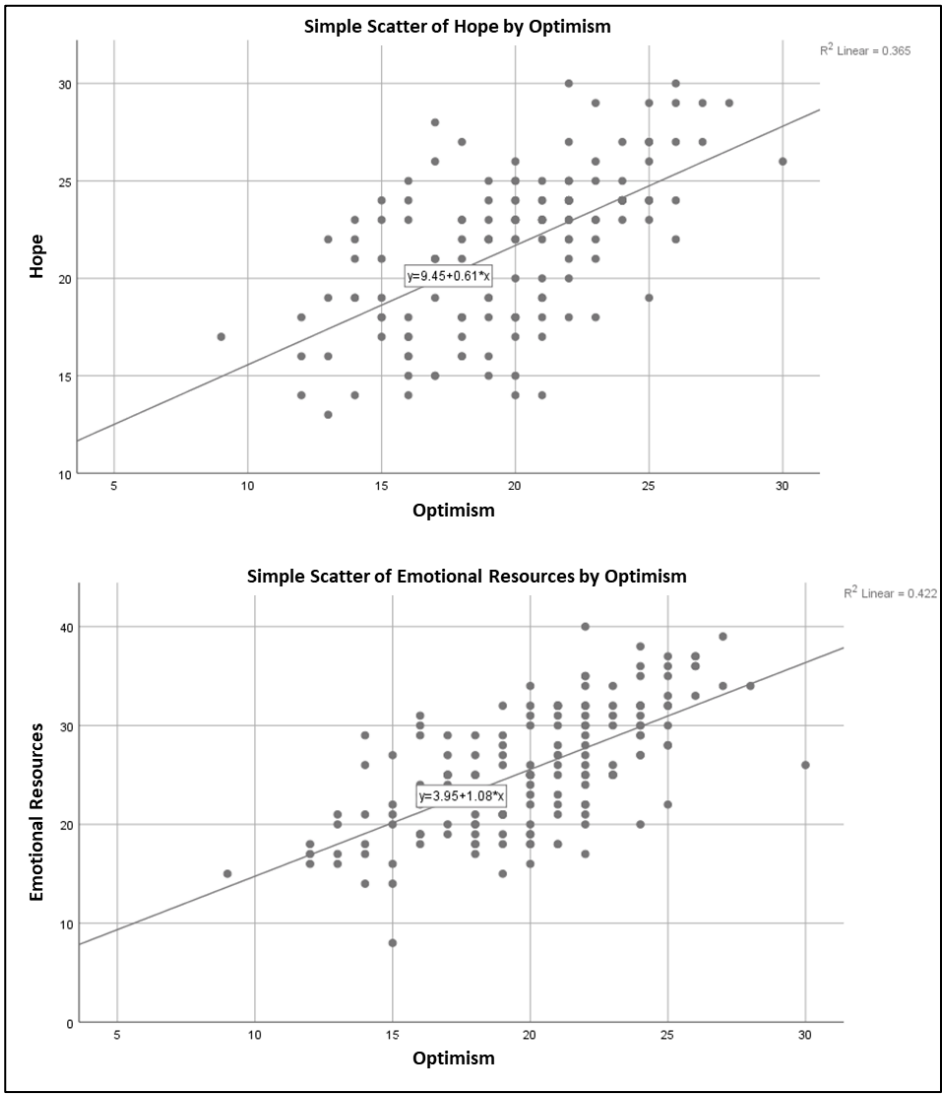


Figure 5.14 Scatterplots Indicating The Relationship Between Optimism And Its Predictors: Emotional Resources And Hope For Employees.

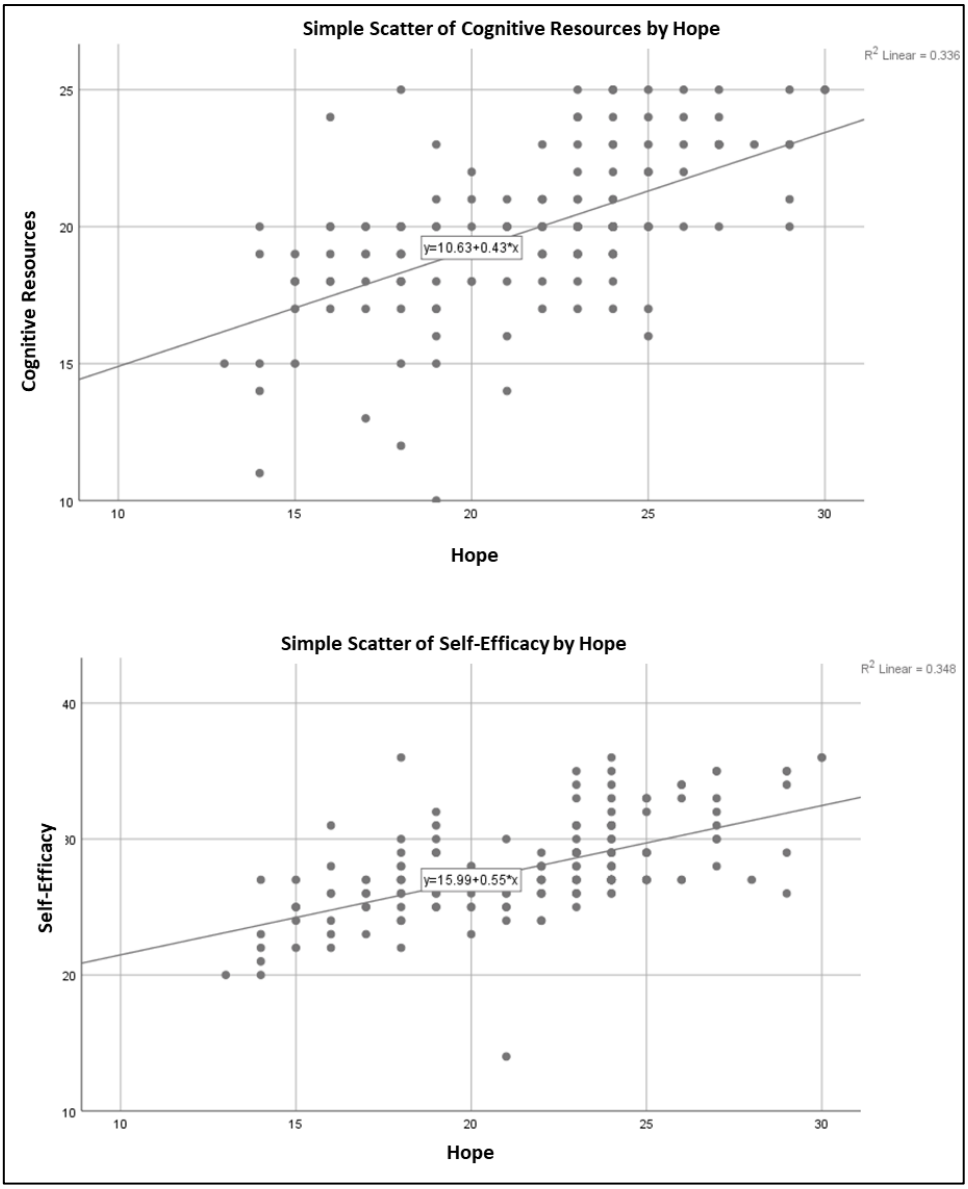


Figure 5.15 Scatterplots Indicating The Relationship Between Hope And Its Predictors: Cognitive Resources And Self-Efficacy For Employees.

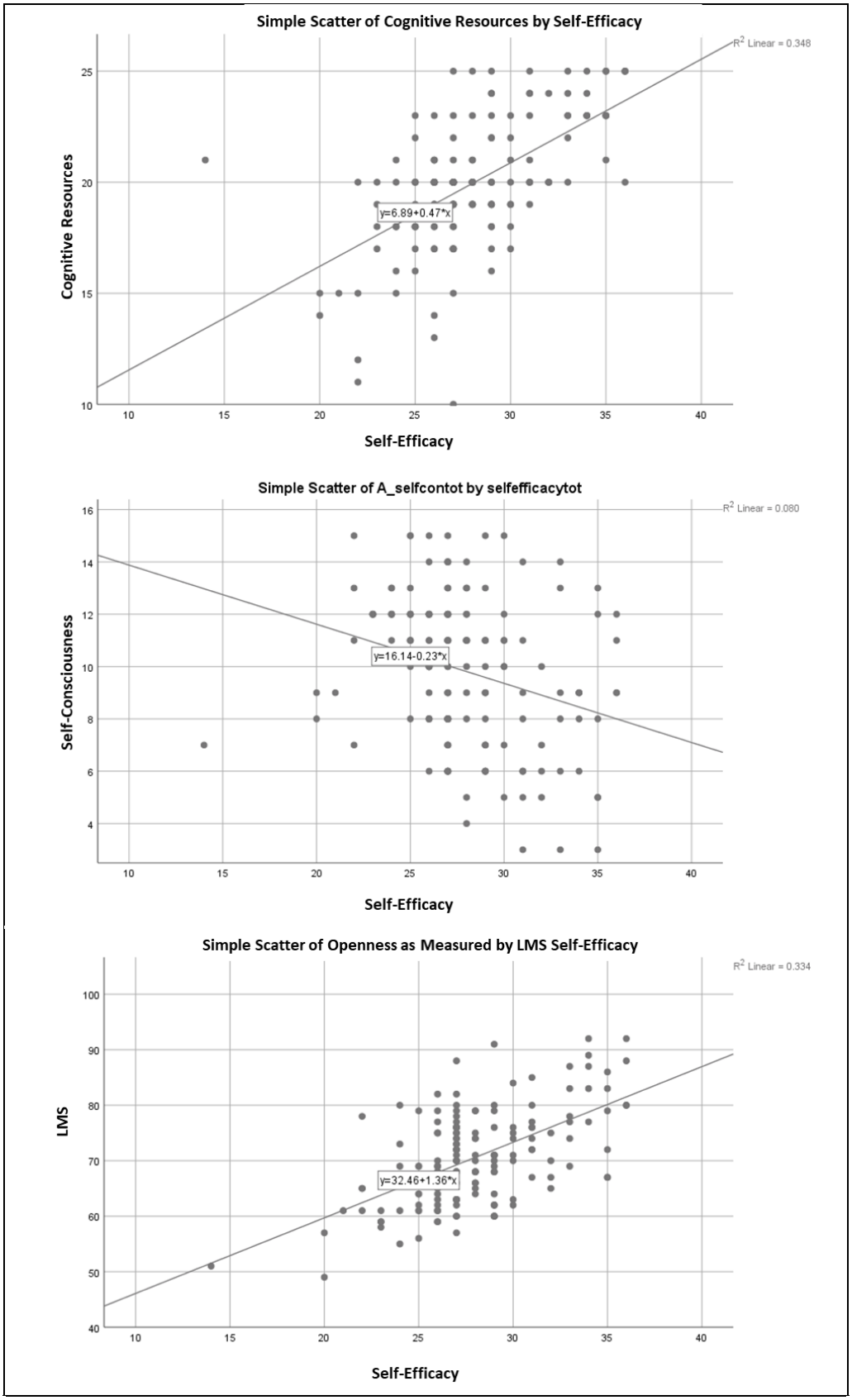


Figure 5.16 Scatterplots Indicating The Relationship Between Self-Efficacy And Its Predictors: Cognitive Resources, Self-consciousness and LMS

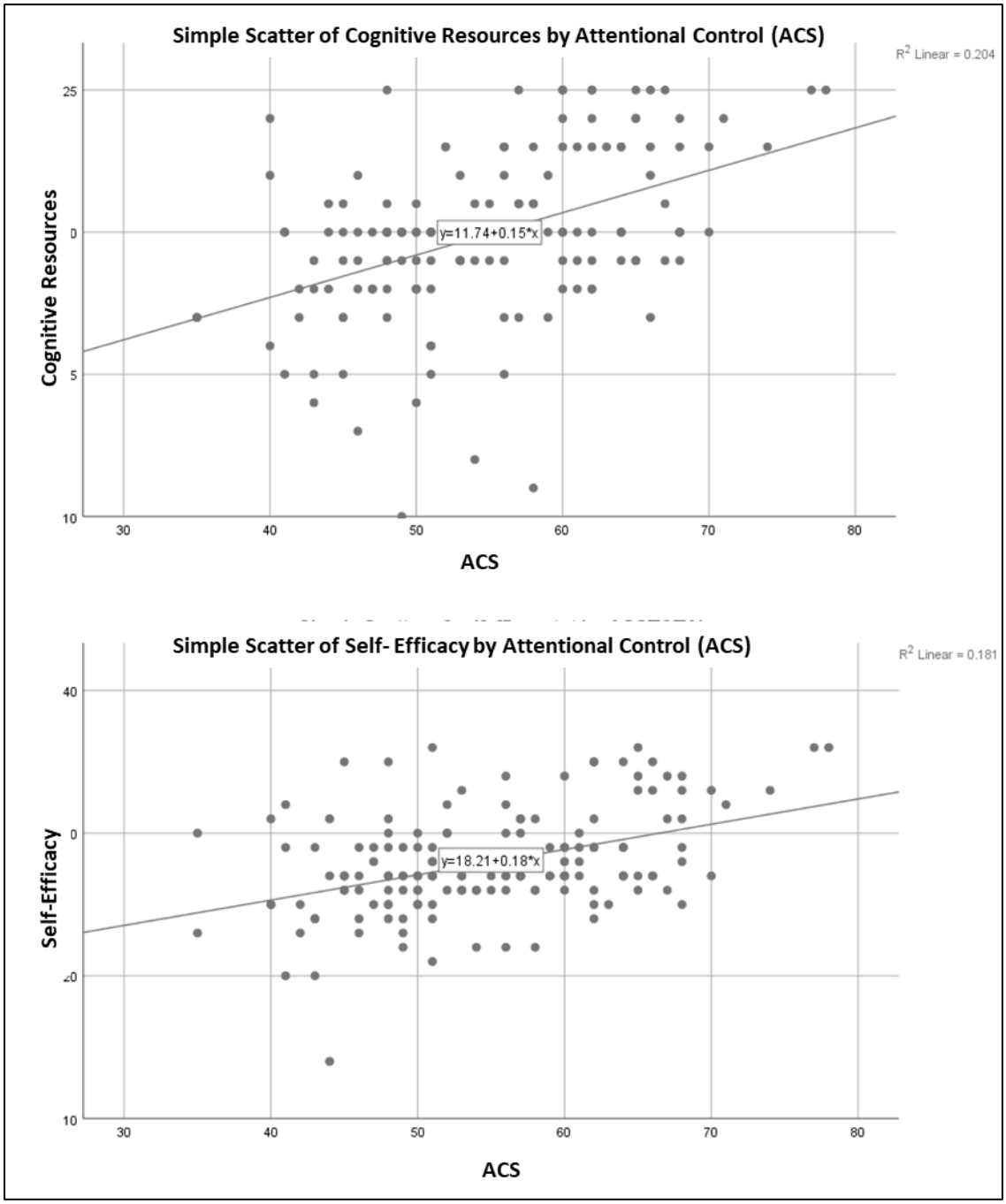


Figure 5.17 Scatterplots Indicating the Relationship between ACS and Its Predictors: Cognitive Resources and Self-Efficacy

The findings of this analysis resulted in a three layer model for employees (see figure 5.18)

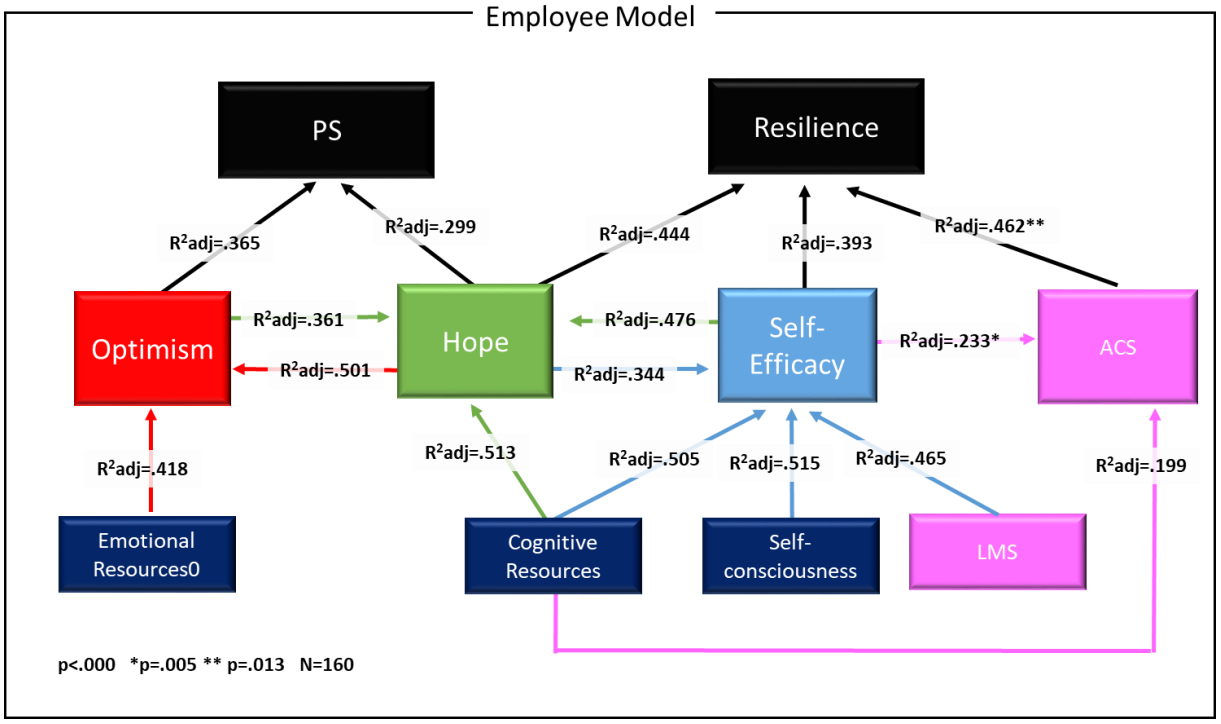


Figure 5.18 Diagram Representing Predictors of Psychological Safety and Resilience and Predictors of Optimism, Hope, Self-Efficacy and ACS for Employees.

5.3.7 Limitations

A post hoc power analysis analysis using a medium effect size (f2=0.15) and an α error probability of.05 indicated a power (1-β error probability) of 0.94. This suggests that, unlike with the student sample, the employee sample was sufficient to achieve statistical significance.

However, all analysis was performed on self-rating questionnaires, therefore there is a risk of participant bias. Using the same participants to measure all variables offers a risk of common method variance. However, a PCA indicated that the questions were measuring different constructs. Furthermore, as recommended by Tehseen, Ramayah and Sajilan (2017), the Harmans single factor test was performed on the data set. The test indicated that the un-rotated principle components analysis resulted in 69 factors accounting for 70% of the variance. The first un-rotated factor generated 22% of the variance in data. Thus, no single factor emerged and the first factor did not capture most of the variance. Therefore, this suggests that CMV was not an issue in this study. However future research might benefit from the compilation of data from other sources such as managers, team members and peers to improve data quality.

The participants in the employee were relatively homogenous in ethnicity and were almost all at least degree educated. This reflects the stiituation in the UK technology industry where only 15% of technology jobs are filled by those from Black, Asian and ethnic minorities (ONS National Population Survey, 2017. https://technation.io/insights/report-2018/jobs-and-skills/). However, the findings in this study cannot be presented as representative of other ethnicities or occupations that require fewer educational qualifications.

5.3.8 Discussion

This study explored the relationship between psychological resources (as defined by Luthan's Psychological Capital model and Kahn's Availability model) and Psychological Safety.

For students, Psychological Safety was predicted Optimism (R^2adj=.235, p=.001). However, for employees, Psychological Safety was predicted by Hope and Optimism (R^2adj=.365, p<.000). Hope was predicted by cognitive resources and self-efficacy (R^2adj=.513, p<.000).

As psychological resources were shown to predict Psychological Safety, H1 was also supported: Individual employees have a role to play in creating their own Psychological Safety. This does not suggest that Edmondson's work on Psychological Safety as a team construct is not valid: Edmondson concedes the individual has a role to play, stating that Psychological Safety is both an intra and inter-personal construct (2003). Edmondson et al. (2016) also argued that individual and self-regulatory processes need to be considered in the context of Psychological Safety. Findings suggest that particular psychological resources can contribute to an individual's Psychological Safety and these change with age or maturity.

Results also demonstrated that the greater the levels of cognitive resources and self-efficacy, the greater the level of hope. Optimism was predicted by emotional resources. This supports H2: Employees with higher levels of intrinsic psychological resources, as measured by Kahn's Availability dimension and Luthans' Psychological Capital model, have higher levels of Psychological Safety.

Luthans' Psychological Capital model includes Resilience. However, extant research defines resilience as the process of leveraging resource, thus the relationship of resilience the Psychological Capital model was examined. Comparison of correlations between Psychological Capital and Psychological Safety and the resource variables of Availability and CFLEX showed little statistical difference to that between HOSE, Psychological Safety and the resource variables, raising the possibility that resilience contributed little to the results. A CFA analysis demonstrated that the

Psychological Capital model produces a better fit when resilience is excluded as an input to Psychological Capital. These findings support H3: Resilience is redundant in the Psychological Capital model as Resilience itself is an output of Hope, Optimism and Self-efficacy.

Supporting extant research, for both studies, resilience was predicted by multiple resources and at least once component of Cognitive flexibility. H5, that Cognitive Flexibility a new component of Psychological Capital to replace Resilience, was supported, creating a new Psychological Capital model of Hope + Optimism + Self-Efficacy + Cognitive Flexibility. The inclusion of LMS and ACS with HOSE reduced the strength of the model compared with only the HOSE variables but was a stronger fit than the original Psychological Capital model.

Analysis using resilience as a dependant variable showed support for H4: Employees with higher levels of intrinsic psychological resources, as measured by Kahn's Availability dimension and Luthans Psychological Capital model will have higher levels of Resilience.

For employees, the key resources for resilience were self-efficacy and hope with ACS adding a further 2% to the variance. These findings reflect research by Gillespie et al. (2007a) on the resilience of nurses (N=772). Using the same measures as this study they showed a strong association between resilience and Hope and Self-efficacy.

Self-Efficacy was predicted by Hope (R^2adj=.344, p<.000), Cognitive Resources, Self-Consciousness and LMS accounted for a further 18% in the variance of Self-Efficacy (R^2adj=.515, p<.000). ACS was predicted by Cognitive Resources and Self-Efficacy (R^2adj= .233, p<.000).

Although Resilience and Psychological Safety were shown to be predicted by psychological resources, H6, a positive correlation between Psychological Safety and Resilience was only partially supported. Correlations between Psychological Safety and Resilience were weak for both employees (r= .281, p<.000) and students (r=.377, p<.016).

This apparent lack of relationship was a surprise but may be accounted for by having different psychological resources as predictors: Hope predicting 30% of Psychological Safety and self-efficacy predicting 39% of Resilience. Although for employees Psychological Safety and resilience share a predictor in the form of Hope, it accounts for only 5% of the variance in Resilience. This is interesting for organisations as it suggests mechanisms to develop resilience may not be the same as for developing Psychological Safety.

In order to test Hypothesis 7: 'Given the state-like nature of Hope + Optimism + Self-Efficacy + Cognitive Flexibility interventions to develop these skills will increase levels of Psychological Safety and Resilience' a longitudinal training study was performed.

6. Training Study

The antecedents of Psychological Safety and Resilience in this study have been demonstrated to include the attitudes of Optimism and Self-Efficacy. Attitudes can be formed implicitly through parental relationships (DeHart, Pelham & Tennan, 2006; Sinclair, Dunn & Lowery, 2005), socialisation (Sinclair et al., 2005) and cultural environment (Banaji, Nosek & Greenwald, 2004) and are considered to be formed both spontaneously, with limited awareness and as a result of conscious consideration (Devos, 2008; Olson & Fazio, 2001).

Implicit attitudes were once considered to be stable and resistant to change (Bohner & Dickel, 2011; Devos, 2008; Gregg, Seibt & Banaji, 2006; Petty & Brinol, 2010) however there are those who argue that implicit attitudes are flexible and can be changed (Blair, 2002; Devos. 2008; Gawronski & Bodenhausen, 2006; Govan & Williams, 2004). Research has shown that implicit attitudes can be influenced by the need to maintain self-image (Fein & Spencer, 1997; Sinclair & Kunda, 1999; Spencer et al., 1998) and the context such as referent social groups' attitudes (Fiske, 1998; Sechrist & Stangor, 2001).

A longitudinal study was designed to determine whether the attitudes of Optimism and Self-Efficacy could be increased through the provision of a training workshop, and if so, whether this would have any impact on Psychological Safety or Resilience. As attitudes are evaluative processes, the workshop aimed to provide participants with the tools develop sufficient psychological resources to be able to consciously select their attitude. For example, focus of attention has been shown to affect the automatic formation of attitudes: where there is a lack of attention, attitudes are more likely to be formed automatically (Blair, 2002; Fiske, 1998).

6.1 Sample

Participants were managers from a variety of sectors who were attending a three-year BA in Applied Management as part of an apprenticeship program with Henley Business School. The half day workshop was included as part of the Personal Effectiveness module and was taught at the end of year 1. The workshop was run with three separate cohorts which included a total of 64 delegates. The average age of the participants was 36.31 years (SD= 7.727) 56.9% were females and 78.4% described themselves as of White ethnicity.

6.2 Procedures and Methods

The study was designed to gather data from employees about their optimism, self-efficacy, Psychological Safety and resilience via an online questionnaire before attending a half day workshop. The questionnaire was repeated 4-6 weeks later to determine if there were any changes in Psychological Safety, resilience or their antecedents.

In order to encourage completion, a shortened version of the questionnaire from study 2 was used (see Appendix W). As the purpose of the longitudinal study was to measure psychological resources only questions from LMS, ACS, Psychological Safety, Availability and the four Psychological Capital variables were used. This resulted in a total of 105 questions. The average completion time was 14.09 minutes.

A link to the questionnaire was added to the Henley Learning Portal for participants to complete as part of pre-work for the workshop. The purpose of the questionnaire was made clear and that completion was voluntary. Before beginning the questionnaire, participants were required to provide explicit consent to proceed.

The four-hour workshop was delivered as designed and detailed in the lesson plan, with one 15 minute break half way through. The purpose of the workshop was to enable participants to manage their attitudes of optimism, self-efficacy and hope. To do so, tools and techniques to develop or maintain the cognitive resources needed to be able to consciously evaluate their attitudes were provided.

Four weeks after the workshop a link to a second questionnaire was distributed via the learning portal. This was shorter questionnaire as no demographic information was required. This reduced the average completion time to 12.38 minutes. A unique identifier created by the participant at t1 was used to match up the data.

Reminders were sent out 5 and 6 weeks after the workshop to maximise completion rates.

All 64 delegates were sent the questionnaire before the workshop and a total of 51 completed at time 1 (79.7%) and 27 completed at time 2. In addition, as part of the degree requirement all participants wrote a reflective piece about the entire year's module from which qualitative data was drawn.

6.2.1 Workshop Content

The Penn Resilience Program run at the University of Pennsylvania, focuses on "emotional and cognitive fitness, strength of character and strong relationships" (https://ppc.sas.upenn.edu/resilience-programs/resilience-skill-set). In addition to "strength of character", "connection" and "optimism" (which, as above, have been defined as attitudes), the skill sets are divided into self-awareness, self-regulation, and mental agility. These align well with the resources identified in Study 1 as being important for Psychological Safety. However, the Penn Resilience Program requires 18 hours of training and is designed for school level students.

The target audience for this workshop was full time employees therefore the design of the workshop needed to be work relevant, engaging and take no more than half a day. Therefore it was not possible to provide training on all the topics identified in the focus groups.

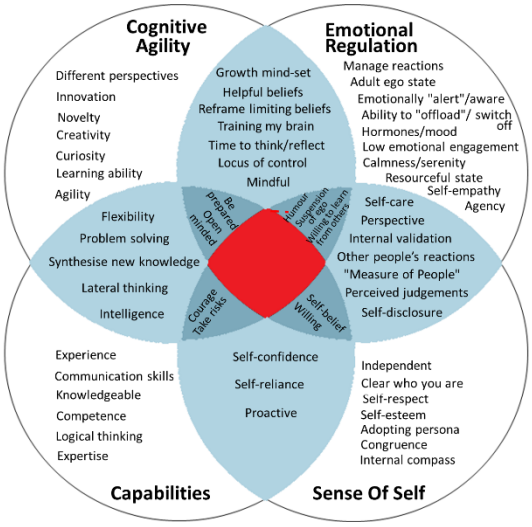


Figure 6.1 Diagram showing outputs from focus groups and the relationships between them.

The previous study showed Psychological Safety and Resilience to be a result of evaluative processes and that the more psychological resources a participant had, the more positive their evaluations. Therefore the workshop was designed to enable participants to develop and maximise their psychological resources.

The resources identified in the focus group were considered, in particular those sitting in the "overlaps" between the outputs categories of the focus groups (see figure 6.1). The obvious area to focus on was the central intersection. However, upon reviewing these, it became apparent that the content of the centre of the model were consequences of intrinsic psychological resources (see figure 6.2).

Figure 6.2 Components placed within the centre of the focus group output Venn diagram.

Therefore, the resources in the remaining intersections were reviewed. Each of these were assessed against research available on the benefit of each resource and what could be meaningfully trained in half a day. In doing so, the processed identified the resources that would impact as many elements in the model as possible. For example, the ability to "reframe limiting

beliefs" may be a useful technique to positively impact "perspective" and "self-confidence". The topics in the overlap between Cognitive Agility and Emotional Regulation (i.e. Growth Mind-set, Locus of Control, Mindfulness and Training Brain) were considered to be trainable in half a day and based on research, had the potential to develop the resources in the three remaining areas of the model. This analysis is summarised below in table 6.1.

Cognitive Agility/ Emotional Regulation	Extant research and….	Emotional Regulation/ Sense of Self	Sense of Self/ Capabilities	Capabilities/ Cognitive Agility
Growth Mind-set, Training Brain, Locus of Control, Mindful, Reframe Limiting Beliefs/Helpful Beliefs		Self-Care, Perspective Perceived Judgements, Other People's Reactions "Measure of People" Internal Validation, Self-Disclosure	Self-Reliance. Self Confidence, Proactive	Flexibility, Lateral Thinking, Able to synthesize new Knowledge, Problem Solving, Intelligence
GROWTH MINDSET (Reframe Limiting Beliefs/Helpful Beliefs)	Intrinsic Motivation / Dopamine/Drive to Learn (Ng, 2018)			• Synthesize new knowledge • Problem Solving
	Less Self-judgement (Vandewalle, 2012)	• Perceived Judgements • Level of Sensitivity • Internal Validation	• Self-confidence	• Problem solving
	Flexible judgements of others (Chiu, Hong & Dweck 1997; Vandewalle 2012)			
	Attention to Corrective Feedback/Adaptive Responses/Open to Challenge and Learning (Mouser et al., 2011)	• Self-Care • Level of Sensitivity • Self-Awareness and Disclosure	• Self-Reliance	• Lateral Thinking • Problem Solving
	Reflection (Vandwalle, 2012)			
	Self-Monitoring & Control (Mouser et al., 2011)		• Self-Confidence • Self-Reliance	• Flexibility
LOCUS OF CONTROL (Reframe Limiting Beliefs/Helpful Beliefs, attentional control)	Psychological Wellbeing/Less Psychological Strain (Dijkstra et al., 2011)	• Self-Care		
	Health and Well Being (Johnson, Batey & Holdsworth 1999)	• Self-Care		
	Emotional Intelligence (Johnson, Batey & Holdsworth 1999)	• Self-Awareness • Suspension of Ego • Perceived Judgements		
	Problem Focused Coping Strategies (Aspinwall & Taylor, 1992) Conflict Management *(Problem solving best strategy)* (Blake & Mouton, 1970)		• Proactive, Self-Reliance, Self-confidence	• Problem Solving

Cognitive Agility/ Emotional Regulation	Extant research and….	Emotional Regulation/ Sense of Self	Sense of Self/ Capabilities	Capabilities/ Cognitive Agility
	Cognitive Reappraisals (Parkes, 1984)	• Internal Validation • Level of Sensitivity		• Flexibility • Lateral thinking • Synthesize new Knowledge
	Values: Achievement (Pandy et al., 1979)	• Self-Awareness	• Self-Confidence	
	Job Sat and Performance (Judge & Bono, 2001)			
	Creativity (Pannells & Claxton, 2008)			• Lateral thinking
	Self Esteem & Self-Efficacy (Judge & Bono, 2001)	• Self-Awareness • Suspension of Ego • Perceived Judgements • Internal Validation • Level of Sensitivity	• Self-Reliance • Self-Confidence	
MINDFULNESS (Training Brain/Attentional Control)	Increased attentional focus/working memory (Chambers et al., 2008; Moore & Malinowski, 2009)			• Flexibility, Lateral Thinking, synthesize new knowledge, Problem Solving.
	Good Attentional Control (Brown et al., 2007; Chambers et al., 2008; Moore & Malinowski, 2009)	• Perceived Judgements, Internal Validation	• Self-Reliance. • Self Confidence, Confidence	• Able to synthesize new Knowledge, Problem Solving.
	Inhibitory Control (Moore & Malinowski, 2009)	• Perceived Judgements, Internal Validation		
	Cog Flex (Brown et al., 2007; Moore & Malinowski, 2009)	• Perceived Judgements, Internal Validation	• Self-Reliance. Self Confidence, Confidence	• Flexibility, • Lateral Thinking • Synthesize new Knowledge, Problem Solving.
	Positive Affect (Chambers et al., 2008)	• Internal Validation	• Self-Reliance. Self Confidence, Confidence	

Table 6.1 Summary Of Analysis Of Resources Identified By Focus Groups, Identifying Research And Potential Impact

6.2.1.1 Growth Mind-set

Mind-sets provide frameworks through which individuals evaluate and make judgements of their own experiences and those of others (Dennis, 2016; Dweck & Leggett, 1988). People who have a predominantly growth mind-set judge themselves and others less negatively (Chiu, Hong & Dweck, 1997; Dweck & Leggett, 1988; Vandewalle, 2012) and are more open to altering perceptions of others in the light of new information (Chiu, Hong & Dweck, 1997; Vandewalle, 2012). The majority of growth mind set research has been with

children or students (Han et al., 2018), however research by Heslin and Vandewalle (2008) replicated this finding in the workplace. Managers who had a predominately fixed mind set were less likely to change their initial appraisal of staff performance over time.

Being open to revaluating one's judgement about the self and others enables the management of your own judgements. Those with a growth mind-set have been found to hold positive self-cognitions, positive affect (Dweck & Leggett, 1988) and a flexible sense of self (Kashdan & Rottenberg, 2010). Dweck and Leggett (1988) found that children with a growth mind-set saw difficulties and setbacks as challenges rather than judging them to be reflections of their own capability. By not using external challenges or "failures" as a means of self-validation, children were more resilient and persevered more in tasks. In turn, this was related to higher self-efficacy, optimism and the seeking of alternative pathways to goals (Hope) (Dennis, 2016; Dweck & Leggett, 1988) and resilience (Moser et al., 2011).

Such perseverance in exploring new and alternative solutions has also been shown to lead to motivation to learn (Dweck, 2016; Dweck & Leggett, 1988; Ng, 2018), problem solving (Dweck & Leggett, 1988), risk taking (Dennis, 2016) and innovation (Dweck, 2016; Stoycheva & Ruskov, 2015). These meet the focus group outputs categorised as 'capabilities/cognitive agility'.

6.2.1.2 Locus of Control

Locus of control (LOC) refers to the extent to which people interpret events as being either a result of their own actions or external factors (Rotter, 1966). In their work with employees of an institution for disabled people, Dijkstra, Beersma and Evers (2011) found that an internal locus of control moderated the impact of conflict on psychological strain suggesting that those with high internal locus of control suffer less psychological strain as a result of workplace conflicts and have a high problem solving conflict management strategy. In her longitudinal study of nursing students Parkes (1984) found that those with higher internal locus of control had higher levels of coping as a result of more positive cognitive appraisals of the situation. Similarly Johnson, Batey and Holdsworth (2009) found a moderately positive correlation between work locus of control and health/wellbeing.

Aspinwall and Taylor (1992) also demonstrated a positive correlation between Locus of Control and optimism and in addition Roy and Gupta (2012) found that those with an internal Locus of Control were self-determined, believing that hard work would result in positive outcomes (optimism). In turn, they found this lead to creativity.

The research supporting a relationship between Locus of Control and creativity is mixed. Several studies have shown found that teams with members who were measured as having external locus of control were more creative than teams with members who had internal locus of control or mixed teams (Bolen & Torrence, 1978; Pannells & Claxton, 2008; Richmond & De La Serna, 1980).

Evidence of a link between creativity and locus of control is sparse. If there is a causal link it would predict that development of Locus of Control may increase lateral thinking and problem solving (a resource shown at the intersection of Capabilities and Cognitive Ability in the focus group output diagram). If not, the value of locus of control might be more important for improved wellbeing, self-awareness through improved cognitive appraisals (Parkes, 1984) and problem solving to cope with conflict (a resource shown at the intersection Emotional Regulation – Sense of Self outputs).

6.2.1.3 Mindfulness

Mindfulness, although a relatively new area of study, has recently been associated with cognitive flexibility, enabling individuals to be able to response positively to changing environments and improved psychological wellbeing.

Many studies of mindfulness have been used in a clinical context, exploring the impact of Mindfulness on depression (Teasdale et al., 2000), eating disorders (Kristeller & Hallett, 1999), wellbeing (Brown et al., 2007) and chronic pain (Kabat-Zinn, Lipworth & Burney 1984). Non clinical studies are scarce, although the benefits of mindfulness are beginning to seep into the organisational context. Studies of the use of mindfulness in organisations have been primarily in the context of health and well-being (Carter, Tobias & Spiegelhalter, 2016). However more recent studies have positively associated mindfulness with leadership (Reb et al., 2018; Verdorfer, 2016), prosocial behaviour (Donald et al., 2019; Kreplin, Farias & Brazil, 2018) and improved individual performance (Dane & Brummel, 2014; Zhang & Wu, 2014) and team performance (LePine et al., 2008). However findings are inconsistent. There are studies that failed to demonstrate an effect of mindfulness on workplace performance (Hafenbrack & Vohs, 2018) and implicit learning (Stillman et al., 2014), both of which are considered key process for attitude formation (Lewicki, Czyzewska & Hoffman,1987; Lewicki, Hill, & Czyzewska, 1992) and social interaction (Lieberman, 2000).

Moore and Malinowski (2009) in their small study of Buddhist meditators, used professionals from a credit management company as the control group. A high positive correlation of was found between a mindfulness measure (KIMS- Kentucky Inventory of Mindfulness Baer et al., 2004) and concentration performance as measured by the d2-concentration and endurance test (d2-test, Brickenkamp, 1962). They demonstrated that mindfulness correlated positively with attentional performance and cognitive flexibility. Chambers, Chuen Yee Lo, & Allen (2008), in another small study demonstrated that Mindfulness levels (as measured by the MAAS – Mindfulness, Attentional Awareness Scale, Brown & Ryan, 2003) increased for the group who attended a 10 day mindfulness training course. Although there were limited changes in self-reported measures of depression and only small changes in the PANAS (Positive and Negative Affect Scale) for either group before and after mindfulness training, participants in the mindfulness group did demonstrate improved performance on the DSB and the Internal Switching Test (IST-Lo & Allen, in Chambers et al., 2008) which Chambers et al., (2008) suggest indicates an improvement in working memory capacity and attentional focus. No significant improvement in attentional switching was demonstrated.

Attentional focus could be related to Langer's definition of mindfulness in that the state of mindfulness can be considered as not being "mindless" (1989, p.1). It enables individuals to be attentive to their environment and thus increasing the ability to choose how to respond (Weick & Sutcliffe, 2006). It enables resilience and flexibility (Levinthal & Rerup, 2006), openness to novelty (Langer, 1997; Sternberg, 2000), increases flow (Csikszentmihalyi, 1990) and cognitive resources and improves decision making (Weick & Sutcliffe, 2006), problem solving (Baer, 2003; Pirson et al., 2012), increases self-awareness (Brown et al., 2007; Sutcliffe, Vogus & Dane, 2016: Tangney, Baumeister & Boone, 2004) and self-regulation (Brown et al., 2007; Moore & Malinowski, 2009).

The increased awareness of the self and ones needs and values that mindfulness brings can lead to an increased ability to self-regulate and make conscious behavioural choices rather than relying on automatic habitual responses (Bishop et al., 2004; Langer, 1989; Plant & Ryan, 1985; Ryan & Brown, 2003). Awareness of and alignment to ones goals and values have been shown to aid cognitive balance and thereby improve well-being (Wallace & Shapiro, 2006).

6.2.1.4 Training Brain

The context of "training brain" in the focus group was related to being able to manage thoughts and reactions. Growth mind set, Locus of Control and Mindfulness will contribute to this, however a section on the physiology of the brain, limbic system and work on controlling automatic thoughts was also included in the workshop.

6.2.2 Workshop Delivery

The workshop was designed to be delivered using a variety of methods: videos, group work, discussion and practical activities. For each topic, participants performed an exercise which was then debriefed and participants were provided with an opportunity to reflect on its application outside of the classroom.

6.2.2.1 Growth Mindset

Within the workshop, growth mindset was taught by providing each participant with a growth mindset questionnaire to complete (see table 6.2).

1	Your intelligence is something very basic about you that can't change much.
2	No matter how much intelligence you have, you can always change it quite a bit.
3	You can always substantially change how intelligent you are.
4	You are a certain kind of person, and there is not much you can do to really change that
5	You can always change basic things about the kind of person you are
6	Music talent can be learned by anyone
7	Only a few people will be truly good at sports – you have to be born with it.
8	Maths is much easier to learn if you are male or maybe come from a culture who values maths.
9	The harder you work at something, the better you will be at it.
10	No matter what kind of person you are, you can always change substantially.
11	Trying new things is stressful for me, I usually avoid it.
12	Some people are good and kind, and some are not. It's not often people change.
13	I appreciate being given feedback about my performance
14	I often get angry when I get feedback about my performance.
15	All human beings without a brain injury or birth defect are capable of the same amount of learning.
16	You can learn new things but you can't really change how intelligent you are.
17	You can do things differently, but the important parts of who you are can't really be changed
18	Human beings are basically good, but sometimes they make terrible decisions.
19	An important reason why I do my work is that I like to learn new things.

20	Truly smart people do not need to try hard.

Table 6.2 Growth mindset questionnaire based on Dweck's Growth Mindset Questionnaire (2000), scored on a four point Likert scale from Strong Disagree to Strongly Agree.

Once completed, they were asked to score their own questionnaire using an answer grid provided (see table 6.3)

Qu No.	Strongly Agree	Agree	Disagree	Strongly Disagree
1	0	1	2	3
2	3	2	1	0
3	3	2	1	0
4	0	1	2	3
5	3	2	1	0
6	3	2	1	0
7	0	1	2	3
8	0	1	2	3
9	3	2	1	0
10	3	2	1	0
Total				

Qu No.	Strongly Agree	Agree	Disagree	Strongly Disagree
11	0	1	2	3
12	0	1	2	3
13	3	2	1	0
14	0	1	2	3
15	3	2	1	0
16	0	1	2	3
17	0	1	2	3
18	3	2	1	0
19	3	2	1	0
20	0	1	2	3
Total				

Now add up all the columns to create a grand total:

SCORING			
1-20	21-33	34-44	44-60
Strong Fixed mind-set	Fixed mind-set with some growth ides	Growth mind-set with some fixed ideas	Strong Growth mind-set

Table 6.3 Answer grid for Growth Mindset Questionnaire

Participants were not asked to reveal their scores. The results were less important than the discussion which began with a question as to what the participants thought of the exercise and whether there were any surprises. Discussions took place around some of the statements. For example, question number 6 "Music talent can be learned by anyone" often prompted discussion. For example, one participant argued that they were not musical having tried the recorder at school and "was no good". The facilitator challenged the participant as to what would need to be different for them to learn the recorder, what the difference was between them and someone who had learnt to play the recorder and finally how would it feel if they adopted a growth mindset about music talent.

Discussion led to a slide on the difference between fixed and growth mindset.

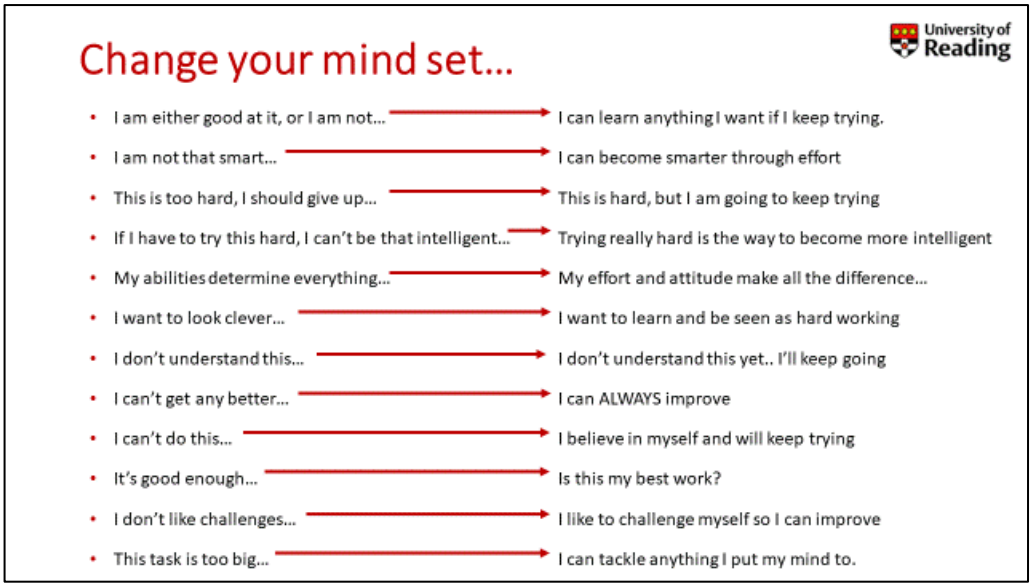


Figure 6.3 Powerpoint slide introducing comparing fixed and growth mindsets

Participants were then asked to consider an event or experience about which they had a fixed mindset. Working in pairs, they discussed how it would feel to adopt a growth mindset. What impact would this have on their self-belief, emotions and feeling of self-efficacy?

Finally, participants returned to the main group and the facilitator asked if anyone would share their learnings. This exercise proved to be quite emotional for some participants as they realised that a fixed mindset had held them back, writing in their reflection assignment that: "*I can recognise instances where I have fallen into a fixed mind-set, which has perhaps impaired my ability to continue to grow*"

6.2.2.2 Locus of Control

Developing locus of control required providing tools and mechanisms to enable participants to be able to focus their attention on that which is important and that they can impact.

Participants were asked what their purpose was. Many responded by providing their job title or role at work. The facilator asked, what would happen if you lost your job? When participants responded “lose my purpose” the facilitor asked how does that feel? How does that make you feel about your role? A discussion took place as to the anxiety this causes. Students were introduced to the concept of Ikigai, meaning life worth living (Sone et al, 2008). The purpose was to detatch individual purpose from goals and to enable individuals to focus on that which is their Ikigai (see figure 6.4).

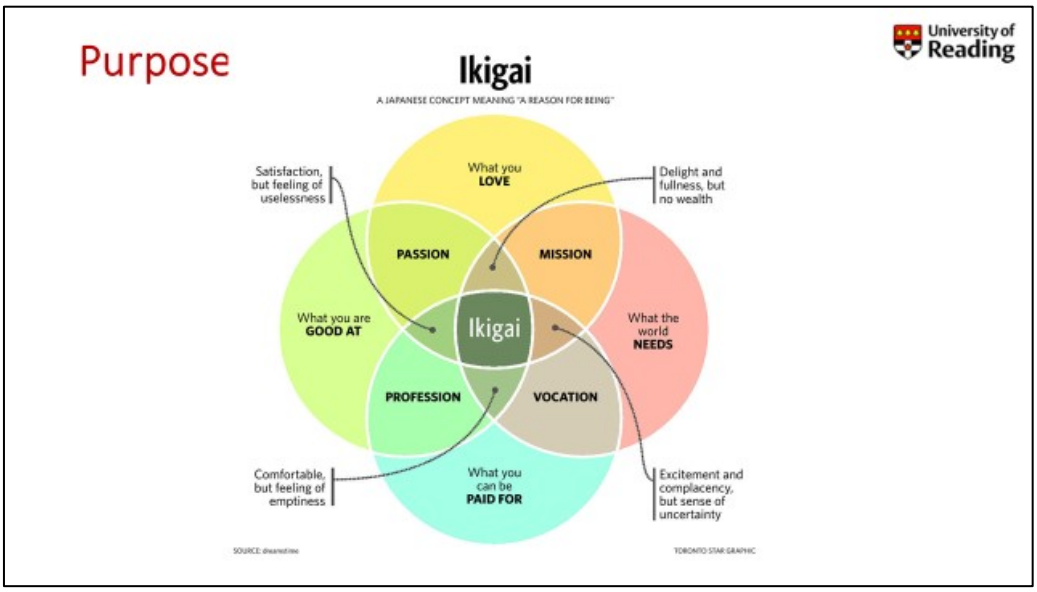


Figure 6.4 Workshop slide showing an illustration of the concept of Ikigai

A discussion was had as to how their current job roles contributed to their purpose rather than their job roles being their purpose.

In order to help partipants recognise the difference between values and goals, they were then provided with a sheet of paper (see figure 6.5) and asked to write their life goals in the centre, using the popular acronym “SMART” (Specific, Measureable, Attaintable, Realistic and Time-Bound).

Many of these were career focused and achieving wealth and happiness. The facilitator then asked the question, if your goal is wealth, why are you engaging in more financially lucrative activities such as selling drugs, employing child labour or improving your career prospects by killing your boss? If you are looking for happiness, then why not give up work and pursue your favourite hobby?

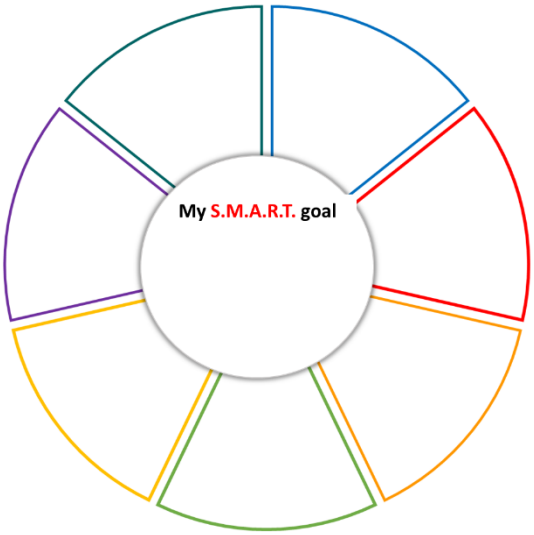


Figure 6.5 Finding Values Exercise: Life Goals

The purpose of the question was to enable discussion about the "how" goals are achieved and the values and morals we apply to ourselves.

Each participant was provided with a list of 28 values, with two blank boxes (see figure 6.6). Participants were asked to select 14. They were invited to rewrite definitions or even to write their own if they wished. Having identified 14, they were then asked to select the top 7. Finally, working with partners, each participant was asked to compare their values with others, and their learnings from the process.

Accomplishment *To achieve my personal objectives with a sense that I have done something as well as, if not better than someone else would have: to experience self satisfaction when I rise to a challenge, accomplish a task or a job or solve a problem.*	**Growth** *To advance, to expand my life through the improvement of my status at work or in the community, to increase my work and non-work related knowledge/skill to find fulfilment in the groups in which I work and live, to mature personally and pofesssionally.*	**Self-Esteem** *To be someone of value in my own eyes and in the eyes of others, to be accepted as a person rather than as a non-entity or as a means to an end. To feel useful and wanted by other people: to be a leader, to be appreciated by others.*
Aesthetic Pleasure *To enjoy and respect things from which I derive pleasure: art, nature, work, and people.*	**Good Time/Pleasure** *To have fun, to enjoy myself: to do thigs I like to do rather than things I must do.*	**Nature** *Inclusion of nature as part of my identity and what I do, a sense of connection with the natural world.*
Ethical Standards. *To believe in and maintain a code of ethics, a sense of right and wrong, to be moral, to conform to the standards of society, my family or spouse, my profession and my personal beliefs.*	**Community** *Gaining a sense of strength from being within a community: contributing to a community acceptming that the community contributes to the wellbeing of others*	**Recognition** *To receive attention, notice, approval or respect from others, enjoying their camaraderie: to join groups for companionship, to look forward to and enjoy social relations.*
Friendship *To have many friends, to work with others enjoying camaraderie: to join groups for companionshiop; to look forward to and enjoy social relations*	**Justice and Parity** *To receive rewards and recognition for my contributions and achievements in proportion to my efforts and comparable to those received by other people.*	**Dedication** *To be loyal to a company: or to a supervisor, may family, social and political groups and others: to give develoption, commitment or friendship to others.*

Faith *To have self-confidence and to believe in my abilities and skills in the goodness and value of life and in the goals and objectives of my company or social organisations: to feel secure in the availability of help from others and to recognise help received.*	**Love** *To experience warmth, feelings of affection, a sense of caing, enthusiasm for attached to, devotion to and interest in something or in another person, especially someone to whom I can make a commitment.*	**Health (Physcial/Mental)** *To feel energetic and free of physical pain from injury, disease or infection: to feel free from worry & anxiety and of emotional blocks to success in all aspects of my life: to have peace of mind.*
Money *To have sufficient income or other assets to use as I wish to be materially comfortable or well off.*	**Courage** *To be entrepreneurial and thus take risks; reach beyond boundaries and experiement.*	**Power** *To lead and direct others, to influence of control otherse, that is to get them to do what I want theme to do.*
Creativity To be free to and have the ability and desire to develop new ideas, solutions to problems, improvements in products or procedures or design opf things or plans: to be mentally challenge: to be first to innovate or create.	**Independence** *To achieve my own goals in the manner best suited to me, to have freedom to come and go as I wish: to be myself at all times, to control my own actions.*	**Responsibilty** *To be held accountable to others or to organisations to which I belong for a job or task to posess something and care for it.*
Integrity *To be consistently open, honest, ethical and genuine.*	**Passion** *To use my drive and commitment to energise and engage and inspire others.*	***Helpfulness*** *To provide assistance, support, empathy or protection to others. To be open, responsive and generous.*
Wisdom *To understand and frame myself a meaning of life, perceiveing experience from a broad frame of reference.*	***Family*** *To devote yourself to, or be converned about your family. To blong to and be accepted by your family. To have a place to call home.*	***Spirituality*** *To have a sense of connection to something bigger than ourselves: a guide for my actions: a focus on the human spirit or soul. Search for meaning.*
Security *To posesse the basic wherewithal for living: to feel safe: to have self-confidence: to have job security and continuity of income.*		

Figure 6.6 List of values provided to workshop participants.

A discussion took place with the premise: if we assumed we only have finate cognitive resources, how do we choose where to invest them.

A slide was provided to demonstrate how values and purpose provide a “a compass” to life, providing a sense of what “feels” write or wrong and thereby modifying how we achieve our goals in life and helping us make decisions.

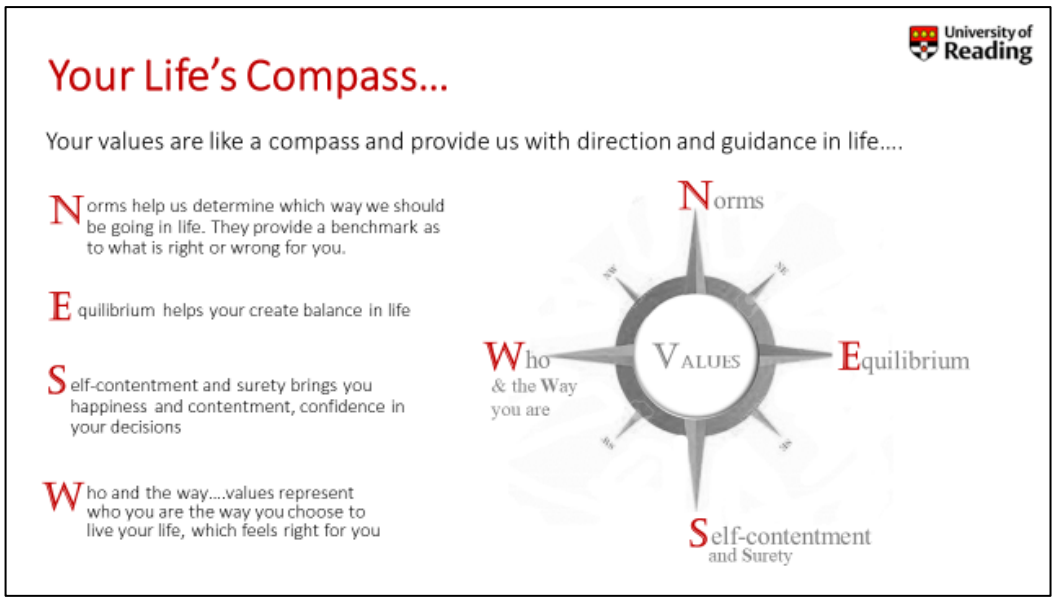


Figure 6.7 Workshop slide illustrating how values and purpose provide a "compass" for life.

Finally, participants were asked to add their chosen 7 values to the wheel and re-write their SMART goals accordingly. In doing so this provided the areas to which we need to focus our attention: that which is important and we can do something about.

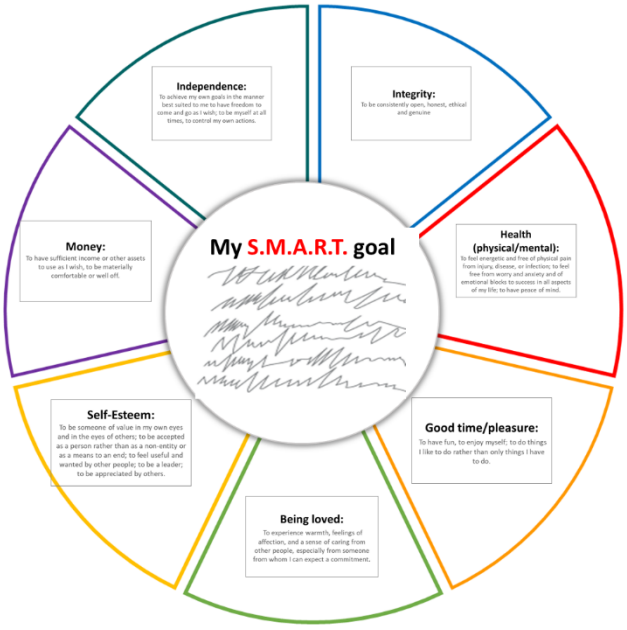


Figure 6.8 Completed Values Wheel

To illustrate this point, the facilitator drew two concentric circles on a flip chart. Participants were asked to shout our all of the things that may stop them getting to work on time. The facilitator wrote each suggestion on the flip chart, placing each one in one of the circles or on the outside of the circles. When the suggestions were complete, the facilitor asked "what do you notice about how I have grouped your suggestions?" Then the circles were labelled as "that which you can control", "that which you can influence" and "out of your control" as shown in figure 6.9.

The facilitator allowed the inevitable discussion as to whether traffic was something you can influence, the conclusion was we are able to anticipate some things and therefore increase our influence.

A light hearted 2-minute video by Gaur Gopal Prabhu was shown to illustrate this and where we focus our attention.

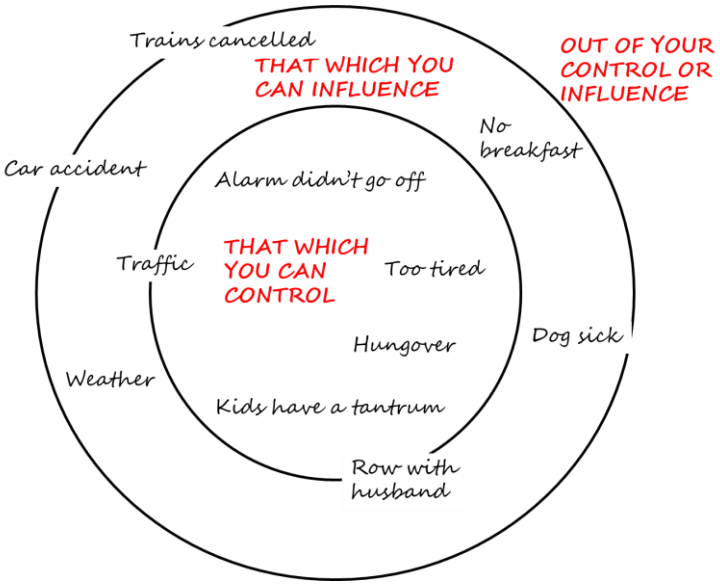


Figure 6.9 Illustration of outputs of Circle of Control Exercise

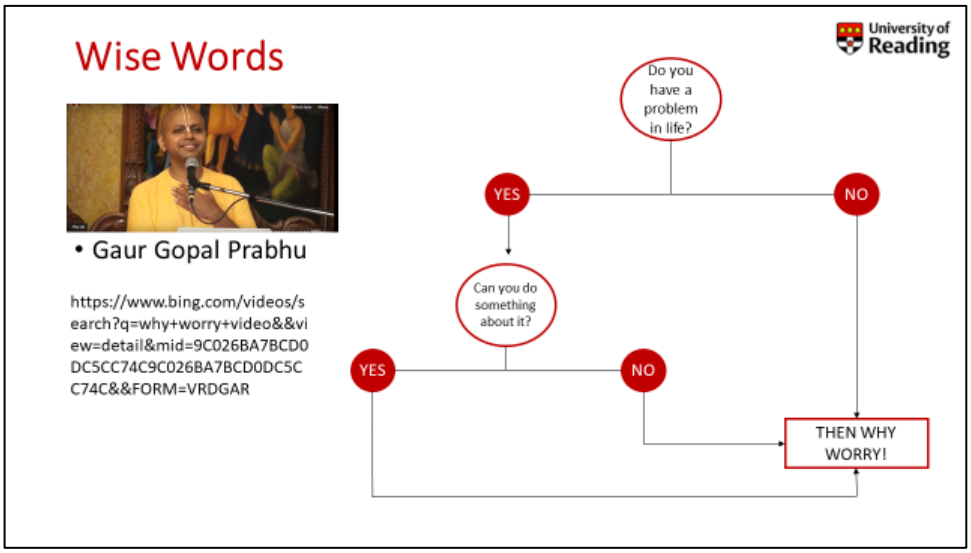


Figure 6.10 Slide showing summary of video by Gaur Gopal Prabhu

6.2.2.3 Training Brain

After a coffee break, the question was asked “for the things we cannot control or influence, what can we do?” The answer was “choose our response”.

A brief introduction to the concept of stimulus-response and how neurons are formed that create automatic responses. The concept of the Triune Brain (MacLean, 1988) was introduced using David Rocks' SCARF model (Rock, 2008) to explain the role of the limbic system and its impact on attitude evaluation. A video on "Automatic Thoughts" was shown (https://www.youtube.com/watch?v=m2zRA5zCA6M). It was explained that the video was designed for college students, but that participants would be provided with an opportunity to apply the concepts to their own experiences. The video explains types of automatic thoughts such as "assuming" "the fairy tale", "over-generalising" and "catastrophing, suggests a method of reflecting using three "R"s (see figure 6.11). The participants were then asked to spend 10 minutes reflecting on a past experience that had resulted in an automatic thought. Then the participants paired up and shared how they applied the three R's and how they now felt about the event.

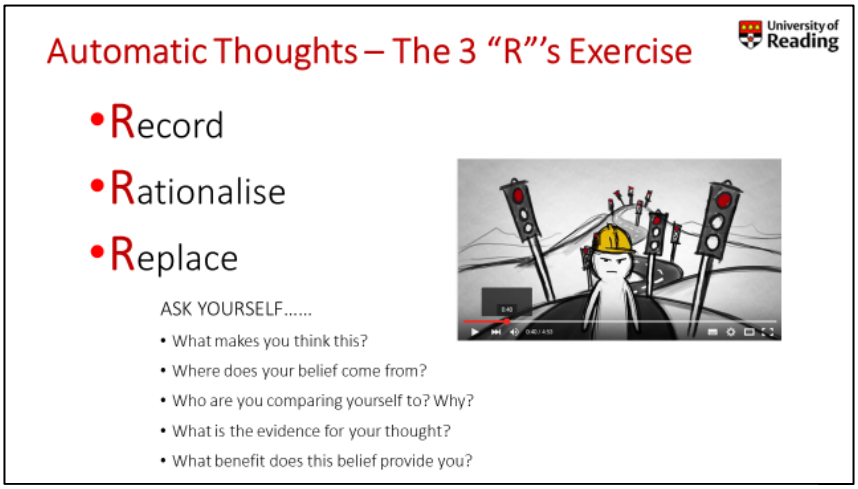


Figure 6.11 Slide showing the reflection exercise using the 3 R's

This led into the section on mindfulness.

6.2.2.4 Mindfulness

Mindfulness was positioned as the need to be aware of when a fixed mindset, automatic thoughts or the focus of attention was unhelpful. Using an example, Kolb's (2007) learning cycle was drawn on the board to illustrate the importance of reflection in learning and changing negative thoughts. Two further models for reflection were introduced, The Five Whys (Pojasek, 2000) and the Gibbs Reflective Cycle (Gibbs, 1988). Working in pairs, participants were then asked to apply these models to past automatic thoughts or events in which they had had an emotional response.

When returning to the plenary session, the facilitator asked: What went well, what was challenging and what did you learn in order to promote discussion. In response to the inevitable challenge that it's difficult to manage your thoughts and emotions, the closing section was introduced.

The healthy brain platter by Rock (2011) was used to illustrate ways to maximise physical, emotional and cognitive resources. Each element was discussed in turn and ideas generated by the group as to how these could be achieved.

A lesson plan was created to determine the running order and ensure consistency of delivery (see table 6.4).

Workshop Objective: To provide participants with a toolkit to develop the cognitive skills to increase resilience and psychological safety.	
Outcomes: By the end of the session today, participants • Define their life values • Articulate how they can contribute to your success • Learn what to focus your attention on • Manage your mind-set • Apply reflection techniques	**Pre-work:** • Online questionnaire **Equipment:** • Projector & sound • Flip chart and pens • Growth mind set questionnaire • Values cards • Values Wheel print out

Introduction
Purpose: to introduce self, study, process and agenda for the session.

Section 1: Know what you are aiming for
Purpose: To enable delegates to see the "bigger picture" around their purpose in life.

Topic & Outcome	Models/Theories	Exercise
Values **Outcome**: By the end of this section, delegates will be able to: • Identify their values • Align activities and actions with values	• Understanding your goals • Ikigai • SMART vs Values based goals	• Identifying your values – card sort/questionnaire • Creation of Values Wheel

Section 2: Focus your attention wisely
Purpose: To enable participants to recognise that we have a choice as to where to focus our attention

Topic & Outcome	Models/Theories	Exercise
Outcome: By the end of this section, delegates will be able to: • Select what to focus attention on	• Locus of control • The role of Choice • Cognitive resources • Gaur Gopal Prabhu Video	• Locus of Control Exercise

Section 3: Believe in Growth
Purpose: to introduce delegates to a new way of thinking that focuses on learning and growth.

Topic & Outcome	Models/Theories	Exercise
The Growth Mind-set	• Growth mind-set (Dweck)	Growth mind-set Questionnaire
The neuroscience of thoughts: how thoughts, beliefs and opinions are formed	• Formation of Neurons • Reframing • Benefits of a growth mind-set	Benefits of a growth mind-set

Section 4: Manage you **Purpose:** To provide tools and techniques for managing thoughts and emotions		
Topic & Outcome	**Models/Theories**	**Exercise**
You and your limbic brain	• The Triune Brain • SCARF (Dr David Rock) • Ladder of Inference • Automatic Thoughts (Wellcast Video)	Reflection Exercise to reframe
Reflection	• The Three R's • The Five Whys • Gibbs Reflective Cycle • The Healthy Mind Platter (Rock and Siegel)	Exercise to apply each of these reflection tools

Table 6.4 Workshop Lesson Plan

All workshop slides can be seen in Appendix V

6.3 Quantitative Analysis

6.3.1 Test for Power

An *a priori* power anlaysis was performed using G*Power v 3.1 (Faul et al, 2007) to test the required sample size to perform an ANOVA repeated measures (within and between) for 8 predictors (Psychological Safety, Resilience, HOSE, LMS, ACS, Cognitive Resources, Emotional Resources). A medium effect size (f=.25), an alpha of .05 and β error of 0.80 was used. Results showed that for two groups, a sample size of 16 participants were required. A post hoc power analysis indicated that having 27 participants gave a power (1- β error probability) of 0.0945. This suggests the sample was of sufficient size for statistical significance.

6.3.2 ANOVA Analysis

A repeated measures ANOVA was performed on LMS, ACS, Psychological Safety, Resilience, HOSE and Psychological Capital variables to explore the impact of time. Since the previous study had indicated a role for the two key availability resources of Emotional Resources and Cognitive Resources in predicting Psychological Safety and Resilience, these variables were also included in the analysis.

Descriptive Statistics

	Mean	Std. Deviation	N	% Diff in Mean
LMS_t1	70.89	9.597	27	3.07
LMS_t2	73.96	7.573	27	
ACS T1	52.56	9.300	27	1.26
ACS T2	53.81	9.707	27	
Psychological Safety _t1	58.81	8.162	27	1.48
Psychological Safety _t2	60.30	8.668	27	
Resilience _t1	24.44	3.846	27	0.15
Resilience_t2	24.59	3.273	27	
HOSE_t1	74.07	9.973	27	1.44
HOSE_t2	75.52	8.920	27	
Psychological Capital _t1	98.52	12.482	27	1.59
Psychological Capital _t2	100.11	11.305	27	
Emo_Resources _t1	26.11	7.753	27	1.22
Emo_Resources _t2	27.33	7.795	27	
Cog_Resources _t1	20.59	3.456	27	.37
Cog_Resources _t22	20.96	3.995	27	

Table 6.5 Descriptives For Employee Measures Of LMS, ACS, Psychological Safety, Resilience, HOSE, Psychological Capital, Emotional Resources (Emo_Resources) And Cognitive Resources (Cog_Resources) At Time 1 (t1) And Time 2 (t2)

The Wilks Lambda test of within-subject effects indicated that there was no overall statistical change in performance before and after the training (F=1.695, df=7, p=.167). Descriptive statistics indicated that the means of each measure between t1 and t2 did demonstrate a small increase for each variable (see table 6.5). However, Pairwise comparison indicated that only the increase in LMS was statistically significant (see table 6.6).

Tests of within-subjects contrasts indicated that only LMS had a statistically significant linear relationship with time: LMS F(1, 27)= 4.532, p=.043.

Pairwise Comparisons

Measure	(I) Time	(J) Time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
LMS	1	2	-3.074*	1.444	.043	-6.042	-.106
	2	1	3.074*	1.444	.043	.106	6.042
ACS	1	2	-1.259	1.086	.257	-3.491	.972
	2	1	1.259	1.086	.257	-.972	3.491
Psychological Safety	1	2	-1.481	1.098	.189	-3.739	.776
	2	1	1.481	1.098	.189	-.776	3.739
Resilience	1	2	-.148	.685	.830	-1.556	1.260
	2	1	.148	.685	.830	-1.260	1.556
HOSE	1	2	-1.444	1.016	.167	-3.533	.644
	2	1	1.444	1.016	.167	-.644	3.533
Psychological Capital	1	2	-1.593	1.375	.257	-4.418	1.233
	2	1	1.593	1.375	.257	-1.233	4.418
Emotional Resources	1	2	-1.222	1.194	.315	-3.676	1.232
	2	1	1.222	1.194	.315	-1.232	3.676
Cognitive Resources	1	2	-.370	.565	.518	-1.532	.792
	2	1	.370	.565	.518	-.792	1.532

Based on estimated marginal means *. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni

Table 6.6 Table Showing Pairwise Comparisons Of Employee Data At Time 1 And Time 2.

A further repeated measures ANOVA on the individual components of HOSE once again indicated small increases of less than 1% in the mean between t1 and t2 (see table 6.7).

Descriptive Statistics

	Mean	Std. Deviation	N	% Diff Mean
HOPETOT_t1	22.33	4.000	27	.41
HOPETOT_t2	22.74	3.601	27	
OPTIMTOT_t1	22.67	4.472	27	.67

OPTIMTOT_t2	23.33	4.472	27		
SETOT_t1	29.07	4.224	27		.37
SETOT_t2	29.44	3.457	27		

Table 6.7 Descriptive Statistics For Employee Variables Over Time 1 (T1) And Time 2 (T2)

The Wilks Lambda test of within-subjects effects indicated that overall, the impact of time was not statistically significant: F=.970, df=3, p=.423. Tests within-subjects contrasts showed no significant relationship between time and any of the individual HOSE components (see table 6.8).

Tests of Within-Subjects Contrasts

Source	Measure	Time	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power[a]
Time	HOPE	Linear	2.241	1	2.241	.407	.529	.407	.094
	OPTIMISM		6.000	1	6.000	2.000	.169	2.000	.275
	SELFEFF		1.852	1	1.852	.234	.633	.234	.075

Computed using alpha =.05

Table 6.8 Tests Within Subjects Contrasts of Hope, Optimism and Self-Efficacy (SelfEff) for Employees

For all quantitative results, see Appendix X

6.4 Qualitative Analysis

All attendees of the BA in Applied Management were required to write an end of year reflective assignment on the topics covered throughout the year (see figure 6.12). There was no explicit requirement to reflect on this specific intervention. However, of the 64 delegates, 36 reflected on an aspect of this workshop (56%).

Comments were read and comments for each topic were recorded; i.e. Locus of Control, Attentional Control & Automatic Thoughts, Limbic System & SCARF, Values & Ikigai, growth mind-set, reflection, the healthy mind platter and openness. A summary of the comments are shown in table 6.9. The full comments are shown in Appendix Y.

> ***"****Write a structured reflection on the learning achieved throughout the year. Use a selection of personal journal entries as a starting point to discuss the concepts and theories which you studied in this module which have particular relevance to your role and organisation. Quote and develop your original journal entries using the principles of reflexive writing. Engage in a critical evaluation of the concepts raised supporting your discussion by the relevant literature"*

Figure 6.12 End Of Module Assignment For Employees Attending The Applied Management Program.

Locus of Control	Attentional Control/ Automatic Thoughts	Limbic System	Ikigai (Purpose)	Growth Mind-set	Reflection Techniques	Healthy Mind Platter	Openness
I need to follow Prabhu's (2016) philosophy in that if I can do something about it, then I should not worry about it as I can change it.	More importantly though, not worrying about things I cannot influence or change. I also need to stop creating automatic negative thoughts and instead need to grow a positive mind-set.	Triggers being stimulated and so they activate the limbic part of my brain. If the limbic part of the brain continues to be stimulated, then this will cause the neocortex part of the brain to shut down, which is the part of the brain used for reasoning.	I have learnt so much about myself. Understanding the way I think, the way I feel, why I feel that way, what I want and why I want it has been somewhat of an epiphany to me.	Growth vs Fixed Mind-set	I will look to adopt the 3R's approach	Round the Healthy Mind Platter and how the seven boxes need aligned to ensure optimal wellbeing. Indeed Gray (2015) has even suggested that the Healthy Mind Platter may be beneficial rolled out across whole organisations. As discussed earlier, my work/life balance is suffering, as also touched on within my journal:	"I need to make sure that I continue to focus on sharing my thoughts and feelings with the team in order to encourage an environment of trust and sharing" (Personal Journey, December
There are many things out of our control and what is the point of upsetting myself when there is nothing I can do about it	Currently I catastrophize too much so need to rationalize these thoughts.	Limbic system - This has been highly prominent in recent weeks given the return of my line manager from maternity leave. I have faced into certain situations where I felt threatened by her presence	has genuinely made me realise that I have to find that balance in life again, where every comes together in harmony,	I definitely have been very much in the Fixed Mind-set since I returned to the UK in 2014, whereas before I lived my life according to the Growth Mind-set. I written this down as one of my development opportunities, I want to change it.	I reflected and I understood that I have started to shift my thought process, which is positive. It was because of realization of areas that I need to change and work on, because I kept reflecting.	Looking at the "Healthy Mind Platter" (Rock & Siegel 2011) I struggled to find one area on the platter that I actually allowed myself to spend any time on. I have come to the conclusion throughout the last 6 months that I am a workaholic and that I need to seriously take some time out for myself and my family.	This has made me make sure that I keep an open mind and don't make any assumptions

Locus of Control	Attentional Control/ Automatic Thoughts	Limbic System	Ikigai (Purpose)	Growth Mind-set	Reflection Techniques	Healthy Mind Platter	Openness
	Greater understanding of who I am and why I respond the way I do. It has allowed me to manage my emotions better and feel more in control of my development	Self-awareness of my emotions has been paramount in learning achieved.	my appreciation of Ikigai and the fact that true growth comes from the personal desire to achieve	having a Growth Mind-set has allowed me to understand that intelligence isn't something you are born with but something you can teach	Pedler's et al.,. (2013b, p136) 'catastrophic contingencies' is another model I could use	My life is out of balance at the moment, I'm not open minded and I haven't lived my live according to the healthy mind platter.	Need to change my way of thinking, and actively compel myself to be more open so that it becomes easier over time.
	I was able to control myself and responded quite differently.	In understanding of our brain has various areas, particularly the limbic system with specifically the amygdala [sic] holds all the emotional memory and hold out flight or fight mode.	Review my Values and think about myself and what is important to me in life, what drives me, challenge my beliefs that drives my behaviour	Can recognise instances where I have fallen into a fixed mind-set, which has perhaps impaired my ability to continue to grow.	Deeper questioning has led me to understand that this feeling stemmed from my own belief that in order to be a good leader, one must portray only strength and not weakness.		
	Automatic Thoughts (Watch Wellcast, 2012) where it was suggest that to overcome overthinking and creating disasters in your mind that the 3Rs should be used.	Something else that really inspired and interested me as part of my learning was Evolution Theory of the Three Brains. This was formulated by neuroscientist Paul D. MacLean (The Triune Brain in evolution, 1990) in the 1960's. His theory was the that brain has 3 distinctive structures.	The process involves considering what you love, what the world needs, what you can be paid for and what you're good at. I found this to be a useful method which helped to identify that a prior career goal would be likely to impact other areas important to me.	I have been able to see growth in my thinking. However, no more so than within the area of mind-sets. What has been interesting to discover is how I, at the time, applied the mind-set thinking to situations in which I faced	Rs should be used. Record, Rationalise and Replace are suggested as the best way to simplify the problems faced and almost normalise them into smaller tasks to ensure less fear.		

Locus of Control	Attentional Control/ Automatic Thoughts	Limbic System	Ikigai (Purpose)	Growth Mind-set	Reflection Techniques	Healthy Mind Platter	Openness
	I have found useful in thinking about is you cannot always change a situation but you can change how you react to it.	you can train yourself to be more logical by trying to control your Limbic System		Focused on the outputs of the Growth Mind-set quix [sic] - it was an interesting outcome for me. I actually scored quite low and only just scraped through into the Growth mind-set with some fixed ideas.	It may be beneficial for me to start recording my feelings via the Gibbs (1998) reflective model. Indeed, Gibbs even suggests that additional competence can occur through using the reflective mode.		
	Self-Management – If you are controlled by words then those who speak those words will have a degree of control over me.	he theory around mind-sets and in particular the Limbic system by Rock (2008) provided a detailed overview of a suggested protection mechanism the brain will process when faced with a situation that may provoke a response.	I find this way of describing it very thought-provoking and really related to it. My purpose in life has always been very clear to me – to help people.		This also intrigued me as a tool for self-reflection.		
	aid a positive mind-set and good focused attitude are within my control and can quickly have a disproportionate positive effect on say what people think of me		Completed my own Ikigai. I found that by doing this that I realised that I was good at my job, and I get paid for it, but I am not passionate about it, and I certainly do not love it.		Using the RRR concept has changed how I now deal with these overcoming thoughts I face and help me rationalise.		

Locus of Control	Attentional Control/ Automatic Thoughts	Limbic System	Ikigai (Purpose)	Growth Mind-set	Reflection Techniques	Healthy Mind Platter	Openness
	has changed how I now deal with these overcoming thoughts		biggest moment of reflection are Ikigai		A theory that resonated with me was the Gibbs (Davies 2012) reflective theory,		
			he Ikigai model helps cut through some of this uncertainty and provide an anchor point to really hone in on effective reflection,		I don't take time to reflect and I don't follow the structure of the Gibbs theory. I like Gibb's theory as I appreciate you must reflective in order to do something better the next time and to be constantly learning.		
			This journey of learning has been life changing: first determining and knowing what my values are and where this stems from and how this has come through to my beliefs and behaviours,	What has been interesting to discover is how I, at the time, applied the mind set thinking to situations in which I faced. However in hindsight I would tackle the situations differently.	The whole reflection process which was required as part of this essay, has made me truly consider and accept the person and leader		
			I have spent more time working on Ikigai.	To analyse where my mind set is perhaps more closed.	Having the tools to further self-analysis.		
			I now understand what my life career and {name} do actually fit all 4 aspects of my 'Ikigai'. This was a		The fourth learning is reflection. I have learnt that I have not been taking enough time to reflect and I haven't been doing it properly.		

Locus of Control	Attentional Control/ Automatic Thoughts	Limbic System	Ikigai (Purpose)	Growth Mind-set	Reflection Techniques	Healthy Mind Platter	Openness
			profound moment for me				
			Ikigai & understanding my values: Ikigai as outlined was a real eye opener for me	try to develop them into a new evolving growth mind se	I find it really interesting and also satisfying to know that a module that I honestly thought would have little benefit to me in my current role, has actually proven my gut instinct		
					Understanding my values will also be incorporated into my day to day reflection		
			This was a really important piece of learning for me and I think it would help colleagues focus in on what their current values are and which value they can use to help shape their PDP.		the Gibbs Reflective model (Gibbs, 1989) was brought to mind this week when I had an interaction with my line manager's manager, t		
2	**9**	**8**	**15**	**9**	**16**	**3**	**3**

Table 6.9 Summary of comments from Employee Assignments relating to Workshop Content.

Reflection had 16 mentions, Values & Ikigai had 15 mentions each, Attentional control-automatic thoughts and growth mind set both had 9 mentions each.

However, this does not reflect the quantity of discussion for each topic. Therefore, all the 4290 words of the comments were analysed to determine what percentage of the total word count could be attributed to each topic.

Analysis was carried out by dividing paragraphs into topic sections. An example is shown below: the first 11 words of the paragraph referred to self-awareness of emotions, therefore these 11 words were attributed to the AC-AT topic. The following 29 to the Limbic System (LS) and the final 20 to a reflection technique that was taught in the workshop (RRR).

> Self-awareness of my emotions has been paramount in learning achieved. An understanding of our brain has various areas, particularly the limbic system with specifically the amygdala [sic] holds all the emotional memory and hold out flight or fight mode. Using the RRR concept has changed how I now deal with these overcoming thoughts I face and help me rationalise.

The result confirmed the analysis of number of mentions in that Ikigai/Values and Reflection were the most mentioned and had the most written about them with 33% and 25% respectively. Both Growth Mind-set and Attentional control-Automatic thoughts had 9 mentions but 13% of the word count was discussing Growth Mind-set, only 6% Attentional control- Automatic thoughts (see table 6.10).

	LoC	AC-AT	LS	IKI	GRW	RFLT	HMP	OPEN
No. of mentions	2	9	8	15	9	16	3	3
% of word count	2%	6%	9%	33%	13%	25%	3%	1%

Table 6.10 Summary of Mentions of Locus of Control (Loc), Attentional Control – Automatic Thoughts (AC-AT), Limbic System (LS), Ikigai (IKI), Growth Mind-Set (GRW), Reflection (RFLT), Healthy Mind Platter (HMP) And Openness (Open) In Reflection Assignments of Employee Participants By Percentage of Word Count.

Of the 4134 words, 537 (13%) were not allocated to any category as they were discussing non-relevant topics.

6.5 Summary of Results

The quantitative analysis suggests the workshop had no significant impact on the measures of Psychological Safety or Resilience between t1 and t2. The increases in Hope, Optimism and Self-efficacy were less than 1%. Only LMS showed a statistically significant increase of 3%.

In contrast the qualitative comments suggested that the workshop added great value to participants and in some cases, there were some profound learnings and realisations. For example, one participant wrote:

> *"looking at the "Healthy Mind Platter" (Rock & Siegel 2011) I struggled to find one area on the platter that I actually allowed myself to spend any time on. I have come to the conclusion throughout the last 6 months that I am a workaholic and that I need to seriously take some time out for myself and my family".*

Another described the workshop as:

> *"I have learnt so much about myself. Understanding the way I think, the way I feel, why I feel that way, what I want and why I want it has been somewhat of an epiphany to me."*

6.6 Limitations

The mimimal increase in measure scores may be a result of a number of different limitations which are discussed below.

Time

It is possible that the workshop increased awareness of the trained skills but that 4 weeks between testing may not have been sufficient for application. Changing ones 'automatic thoughts' requires time and habitual change to rewire often "hard-wired" habits in order to develop new ways of thinking. Recognised as enabling resilience, the necessary brain plasticity can be enhanced through exercise, mindfulness and gaining meaning and purpose in life (McEwen, 2016). Although qualitatively, the workshop appeared to have an impact on purpose and meaning, exercise and mindfulness require changing physical and cognitive habits.

The Nature of Attitudes

This research has suggested that Psychological Safety and Resilince are predicted by attitudes. As will be discussed in chapter 7, the formation of attitudes is a complex process

argued to be a result of stored memories (Bohner et al , 2008; Fazio, 2007; Petty et al, 2007), motivations (Fazio, 2007), accessible information (Gawronski, 2007; Schwarz, 2007), frequency of use (Higgins, 1996) and other evaluative processes (Petty et al 2007). Thus, to be able to create significant shifts in attitudes such as Hope, Optimism and Self-efficacy within 4 hours is unlikely. The aim of the workshop was to provide tools to enable an increase in the psychological resources that predict these attitudes.

Environment

Returning to a work environment after the workshop, puts the delegates to the same contextual environment in which habits were formed. To change habits and enable new practises, as suggested in the transtheoretical model of behaviour change (Prochaska, DiClemente, & Norcross, 1997) no matter how strong the intention to change, the stimulus provoking the original behaviour needs to change: for example the environment (Prochaska, Redding & Evers, 2015; Wood, Tam & Witt, 2005).

Furthermore, research suggests that in order to transfer learning into the workplace, in addition to motivation, an employee requires the opportunity to perform and apply the knowledge (Addy & Blanchard, 2010; Stes, Coertjens & Van Petegem, 2010), supervisors support (Dixon & Scott, 2003; O'Hara & Pritchard, 2008; Stepp-Greany, 2004) and peer support (Chitpin, 2011; Fedock, Zambo & Cobern, 1996; Gallos, van den Berg & Treagust, 2005; O'Hara & Pritchard, 2008). However, research by Holton III, Chem and Naquin (2003) demonstrated that mechanisms for learning transfer depended on the type of organisation. For those in private sector organisations, linking the opportunity to apply new learning and the application of learning to performance outcomes led to learning transfer. However, for non-profit organisations it was supervisor support that was the most important element in creating change.

Workshop content

Although the attitudes of HOSE appear to have improved, it may be that the content of the workshop was not practical enough for application into the workplace. Transferring learning from the classroom into the workplace is not a new challenge (Baldwin & Ford, 1988; Griffin, 2011). In their review into the required variables for transfer of learning in educational environments, every one of the 30 studies researched identified practise and feedback as a required variable for transfer of learning (De Rijdt et al., 2013). Kauffeld & Lehmann-Willenbrock (2010) suggest that learning be spaced out with breaks in between in

order to maximise learning. Recent studies demonstrating the importance of the role of sleep in learning, (Fattinger et al., 2017; Nusbaum et al., 2018) suggest that the break should be sufficient to allow an opportunity to sleep (Nusbaum et al., 2018). The intervention workshop was half day, therefore focused on the participant as an individual rather than an employee or manager with no opportunity for practise.

Measures

The aim of the workshop was to develop Psychological Capital, Psychological Safety and Resilience indirectly by helping change mind-sets and attitude through topics such as growth mind-set, purpose and understanding the limbic system. As such the measures used, although consistent throughout the study, did not directly measure the content of the workshop. Had levels of growth mind-set, locus of control or self-control been measured before and after the workshop, the statistical change between time 1 and 2 may have been greater.

Participants

For the longitudinal study, all the employee participants were all professionals in managerial positions. They were attending a part time degree program to improve and ratify their leadership skills. Their attendance on this three year program was being paid for by their companies. The participants may therefore already be optimistic with hope, given the investment in them by their employers. Given organisations are most likely to make such a financial investment in good performers, those taking the study may also be the most self-efficacious.

6.7 Discussion

The purpose of the longitudinal study was to test the hypothesis that the psychological resources identified in studies 1 and 2 could be developed. This hypothesis has been partially supported as although increases were shown in every measure, these were statistically non-signficant, with the exception of LMS. However, the quantitative results do not seem to reflect the qualitative data. There may be several reasons for this.

The nature of the workshop content focused on the tools to enable attitude shift: indeed the most discussed topics were around understanding your purpose and context (offering a sense of hope and

optimism) and growth mind-set to reframe success or failure into a continuous learning mind-set (Hope, Optimism and Self-Efficacy).

Reflection was a key element of the overall program and therefore there was an awareness of reflection and its benefits for learning about the self and capabilities (self-efficacy). Furthermore, the assignment was a reflection piece, forcing the application of the process.

Overall the findings from this study have potential implications for organisations, employees and even the education sector. The following chapter discusses these along with the potential further research.

7. General Discussion

This study aimed to explore Luthans & Church's (2002) Psychological Capital model and its relationship with Psychological Safety and Resilience, hypothesising that the addition of Cognitive Flexibility would strengthen any relationship. In doing so, the research aimed to add to extant research by determining whether individual-level intrinsic cognitive resources can enable Psychological Safety and Resilience in today's organisation.

7.1 Summary of Findings

There were a total of seven hypotheses tested, the findings for each are summarised below.

Hypothesis 1: Individual employees have a role to play in creating their own Psychological Safety.

During focus groups, when asked what what it that created Psychological Safety in the workplace, all groups began by describing extrinsic mechanisms such as trust, leaders and organisational vision. When asked whether Psychological Safety was therefore the responsibility of the organisation only, the answer was unanimously "no", all groups recognising that the employee themselves had a role to play. Intrinsic mechanisms that were subsequently identified fell into four categories: Capabilities, Cognitive Agility, Emotional Regulation and Sense of Self. Therefore, this hypothesis was supported.

Hypothesis 2: Employees with higher levels of intrinsic psychological resources, as measured by Kahn's Availability dimension and Luthans the Psychological Capital model, will have higher levels of Psychological Safety.

All resources showed a positive linear relationship with Psychological Safety with the exception of Self-Conciousness which as expected had a negative linear relationship. This suggest that where psychological resources are higher, so to is the level of Psychological Safety. Therefore, this hypothesis was supported.

Hypothesis 3: Resilience is redundant in the Psychological Capital model as Resilience is an output of Hope, Optimism and Self-efficacy.

When comparing correlations between variables and Psychological Capital (resilience included) with correlations between variables and HOSE (resilience excluded) there was very little difference, and in one case no difference. This suggested that resilience

contributed little to the construct of Psychological Capital. Confirmatory Factor Analysis confirmed that a three-factor model of hope, optimism and self-efficacy had a stronger fit than when resilience was included. As a result, Resilience became another dependant variable alongside Psychological Safety. Therefore, this hypothesis was supported.

Hypothesis 4: Employees with higher levels of intrinsic psychological resources, as measured by Kahn's Availability dimension and Luthans' Psychological Capital model will have higher levels of Resilience

As with Psychological Safety, all resource variables showed a positive linear relationship with Resilience with the exception of Self-Conciousness which as expected had a negative linear relationship. This suggest that where psychological resources are higher, so to is the level of Resilience. Therefore, this hypothesis was supported.

Hypothesis 5: Cognitive Flexibility, a new component of Psychological Capital will replace resilience, creating a new model of Hope + Optimism + Self-Efficacy +Cognitive Flexibility.

The variables of LMS and ACS were added to the HOSE model and a confirmatory factor analysis indicated that indeed, the model was stronger with the addition of these two cognitive flexibility measures. This created a new variable HOSE-LA. Therefore, this hypothesis was supported.

Hypothesis 6: Given that both Resilience and Psychological Safety are hypothesised to be outputs of personal resources there will be a positive relationship between Psychological Safety and Resilience

Surprisingly there was a weak relationship between Psychological Safety and Reslience. This was considered to be due to the different variables that predicted each dependant variable. Therefore, this hypothesis was only partially supported.

Hypothesise 7: Interventions to develop personal resources will increase levels of Psychological Safety and Resilience.

Four to six weeks after four-hour workshop to develop skills to help participants maximise their cognitive and emotional resources, only the variable of LMS had increased by only 3%. Therefore, this hypothesis was only partially supported.

Figure 7.1 summarises the findings, demonstrating that for employees, the relationship between cognitive and emotional psychological resources and Psychological Safety or Resilience is "filtered" through the components of HOSE and Attentional Control. This chapter will firstly discuss the implications of these predictors for Psychological Safety and Resilience, and then will discuss the implications for Organisations and Leaders as well as Employees. Although students were not the target populations for this study and the sample was small with limited power, some potential implications for Education is discussed. Finally, the limitations of this study are explored and suggestions made for potential future areas of research.

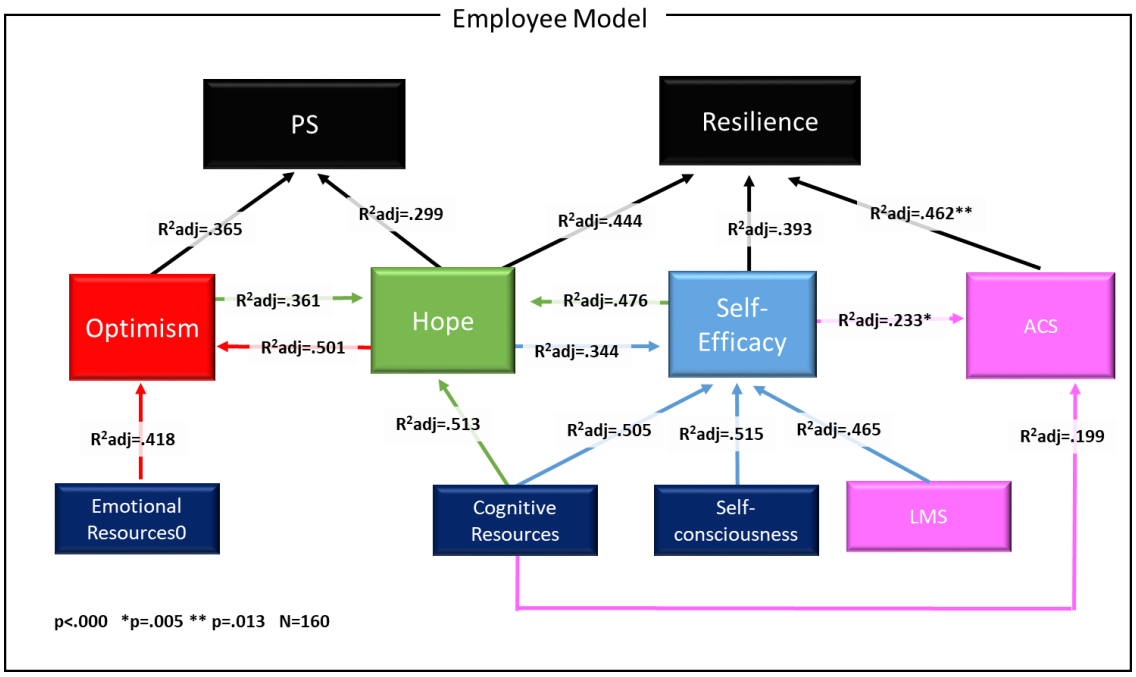


Figure 7.1 Diagram Illustrating the Predictors of Psychological Safety and Resilience for Employees.

7.1 Psychological Safety, Hope and Optimism

This research suggests that having a goal and being able to see the pathways to achievements of the goal contribute to feeling psychologically safe. Hope, a construct consisting of the 'will and way' to goal achievement, accounted for 30% of the variance in Psychological Safety. This supports the work of Faraj and Yan (2009) who showed the importance of goals in creating Psychological Safety in their work with teams. Common team goals create Psychological Safety (Carmeli & Gittell, 2009) by establishing boundaries for expectations and responsibility thus decreasing the uncertainty of outcomes and accountability (Faraj & Yan, 2009).This can therefore impact trust (Simpson, 2007) which in turn has a moderating effect on Psychological Safety. Similarly, experiencing goal conflict

(achievement of one goal undermines or compromises the achievement of another) and goal discrepancy, (when achievement of a goal runs counter to one's sense of self or personal needs) have been shown to lead to poor emotional wellbeing (Carver, Lawrence & Scheier, 1999; Kelly, Mansell & Wood, 2015; Strauman & Higgins, 1988). This research may go some way to explain this. A goal that compromises one's own needs may be evaluated as having a negative outcome on self (irrespective of the success of the work outcome) and therefore diminish the will (agency) to achieve the goal. Recent work in organisations has supported these findings, demonstrating a relationship between goals and employee burnout (Sijbom et al., 2019) and between goal conflict and occupational wellbeing (Hyvönen, Rantanen & Huhtala, 2015).

Optimism was also a predictor of Psychological Safety.

Snyder et al., (2001) agree that there are many shared aspects of hope and optimism. Correlations in this study suggested this was the case and Optimism accounted for 36% of the variance in Hope. After all, being optimistic that the pathways to a goal will lead to a positive outcome is likely to increase the will to follow these paths.

This reflects extant research. Desrumaux et al. (2015) in their research with school teachers, identified a positive correlation between job climate and optimism. Additionally, Kluemper et al., (2009) found that state optimism in the workplace was negatively correlated with burnout and distress symptoms. Avey et al. (2008) described Psychological Capital as a significant negative predictor of cynicism although this was measured as a single construct and the specific contribution of optimism is unclear. In combination, this research suggests that for Psychological Safety, employees require clarity on goals, how to achieve them and that the goals will result in a positive outcome.

There is evidence to suggest that Hope and Optimism are complementary resources. Optimists have been shown to demonstrate plan-full behaviour (Scheier, Weintraub & Carver, 1986). However, optimism has also been shown to reduce the evaluation of risk (Sheppard et al., 2015) which can lead to a "Pollyanna" view of the world: an un-realistically favourable evaluation of future outcomes (McKenna, 1993; Shepperd et al., 2015; Tenney, Logg & Moore, 2015). Hope may mitigate this by providing realistic goals and pathways to achieve successful outcomes. In support of this, Hope has been shown to be positively correlated with positive thinking and affect (Scheier, Weintraub & Carver, 1986). For instance, in one study, those scoring high on a Hope scale had a tendency to focus on more positive affirming statements (Snyder et al., 1996, 1997).

The results of the studies reported in this thesis suggest that emotional resources predict Optimism for employees. Since optimism was also related to Hope, it is possible that the causal effect of optimism Psychological Safety is moderated by the cognitive resources and self-efficacy that predicted Hope.

This study suggests that for Psychological Safety, an employee's needs to have goal which they perceive as achievable and will result in a positive outcome. Both Hope and Optimism are evaluative processes: they evaluate the extent to which a goal is achievable with a successful outcome. This suggests that Psychological Safety might be a product of an employee's evaluative processes; their perception of an outcome of a conversation with a peer, a meeting with a manager or an organisational initiative. Employees assign both positive and negative meaning to events and interactions (James & Sells, 1981): For instance, a negative behaviour by a colleague could either be the result of something you have done (negative attribution) or due to other external factors (positive attribution). It is possible to make similarly negative or positive attributions about events in a VUCA environment; the resulting constant change could, for instance, be the result of necessary adaptation to the environment (positive attribution) or 'leadership incompetence' (negative attribution). The chosen attribution will contribute to Psychological Safety in that positive attributions are more likely to increase this while negative attributions could undermine it.

Thus for employees, Psychological Safety might be an evaluatory process that requires both cognitive and emotional resources. Interestingly, neither hope nor optimism predicted Psychological Safety for students. For students' levels of emotional resources determined how psychologically safe they felt.

7.2 Resilience, Self-Efficacy, Hope and ACS

This research suggests that resilience is a result of a belief that there is a means to achieve a goal (hope) that you have the capability to achieve it (self-efficacy) and you are able to focus your attention appropriately (ACS).

This research therefore supported the hypothesis that resilience is an output of the psychological resources of HOSE, specifically self-efficacy and hope, with optimism contributing explanatory variance to Hope. This finding supports extant research that resilience is a combination of factors (Egeland et al., 1993; Glantz & Sloboda, 2002; Sutcliffe & Vogus, 2003) , the most strongly evidenced being self-efficacy (Gillespie, 2007b; Rutter, 2012; Sommer, 2016; Sutcliffe & Vogus, 2003, Vogus & Sutcliffe, 2007). Sutcliffe and Vogus (2003) suggest that self-efficacy resides within resilience, and indeed self-efficacy and resilience were strongly positively correlated in this study. However, results

of an EFA in this study negated the possibility that self-efficacy and resilience measures were assessing the same construct since these questions loaded onto separate factors.

Since resilience was found to be an output of HOSE, it is of interest to determine which components of HOSE contribute to resilience. Hope, Self-Efficacy and ACS all were found to contribute to variance in resilience. This supports the findings of Gillespie et al. (2007b) and Snyder and McCullough (2000) that resilience stems from goal orientation (i.e. *hope*) and achievement (i.e. *self-efficacy*). Although self-efficacy has been attributed to resilience in coping with stress (Bandura, 1982; Werner 1993) hope has been shown to be positively correlated self-worth in college athletes (Curry, Snyder & Cook, 1997). Snyders Hope Theory argues that those who have demonstrated high hope see stressors as motivating challenges, whereas those with low hope lack the confidence that they are able to attain their goals (O'Sullivan, 2011; Snyder, 2002).

In this study, attentional control as measured by the ACS questionnaire (Derryberry & Reed, 2002b) accounted for a significant variance in resilience. The ability to control one's focus of attention has been shown to be a differentiator between those who experience low anxiety and those who experience high anxiety (Derakshan & Eysenck, 2009; Derryberry & Reed, 2002b). When evaluating thoughts, people or objects, an individual might choose to focus on negative aspects or threat. The inability to disengage one's attention to reframe and focus on something more positive, can lead to anxiety, which in turn reduces our psychological resources (Eynsenck et al., 2007). Furthermore, the processes of attentional control, shifting, updating and inhibition have been shown to contribute to executive thinking tasks (Miyake et al., 2000) suggesting cognitive resources may be enabled through attentional control. However, this study found that the primary predictor of ACS was cognitive resources suggesting that cognitive resources enable attentional control.

It is interesting that Optimism was not a direct predictor of resilience, although optimism did account for 36% if the variance of Hope. Perhaps it is the absence of Optimism that differentiates the resilient. Those who are resilient continue to try to succeed even when they do not hold positive expectations about the outcome. For example, during an organisational restructure an individual may not be optimistic about the outcome for themselves and their role, however with self-efficacy and the ability to create pathways to goals, they have the resilience to withstand what may prove a challenging time ahead. Indeed, the lack of optimism in a positive outcome may create the agency to seek alternatives and construct new possibilities.

7.3 The HOSE Model

The results of this research support the theory that the constructs of Hope, Optimism and Self-Efficacy are related (Carver & Sheier, 2002; Luthans et al., 2007; Magalleta & Oliver, 1999; Snyder et al., 2001). This is in agreement with research that found that Hope supports Optimism and Self-efficacy (Magaletta & Oliver, 1999). In the research presented in this thesis, for employees, Hope accounted for 34% of the variance in Self-efficacy and 8% of the variance in Optimism. The relationship was shown to be reciprocal: self-efficacy contributing 48% of the variance in Hope and Optimism 36% of the variance. As Luthans and Jensen (2002) explain, the agency component of Hope shares a commonality with optimism concerning expectations about outcomes. The pathways component of Hope also appears to share commonality with self-efficacy: being able to identify ways to achieve goals (see figure 7.2).

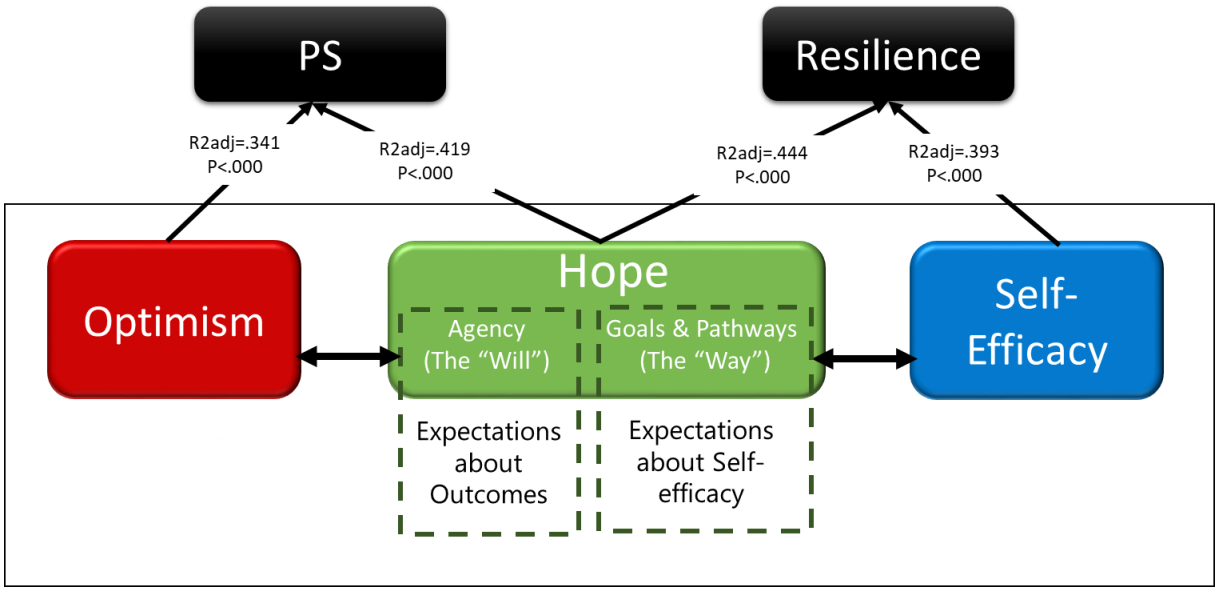


Figure 7.2 Diagram Illustrating the Relationship between Optimism and Self-Efficacy with Hope. Based On Work Of: Magaletta, P. R., & Oliver, J. M. (1999). The Hope Construct, Will, and Ways: Their Relations with Self-Efficacy, Optimism, and General Well-Being. Journal of Clinical Psychology, 55(5), 539-551

This research supported the hypothesis that resilience should be excluded from the Psychological Capital model. One explanation for this is that while the resources that compose of HOSE are considered evaluative processes, resilience is considered a descriptive construct (Glantz et al., 2002). Resilience is a response to, or consequence of, an evaluation as to whether one's capability is able to meet demands (Rutter, 1987; Staudinger et al., 1993). Thus, resilience appears to be an output of evaluative processes and, as the results of this study suggest, it should not be a component of the Psychological Capital model but an output of this construct.

In theory, changing one's evaluation of a measure or stressor should maintain resilience. This idea is supported by the work of Coutu (2002), McCubbin (2001) and Werner (2003) who refer to the act of reconceptualising and reframing stressors as a means to moderate the effects of stressors. Similarly, Dweck & Leggett (1988) in their research on growth mind-set have suggested that reframing capabilities as learning, an ability that requires attentional control improves resilience (Aditomo, 2015; Ng, 2018). It seems appropriate then that attentional control is likely to be a predictor of resilience.

A further challenge to the current Psychological Capital model concerns the construct of self-efficacy. Bandura (1994, 1997) stated that self-efficacy and confidence were separate constructs, however Luthans (email, 2018) considered them to be the same in that they used a measure of self-efficacy that measured confidence. However, by using the Jerusalem and Schwarzer self-efficacy questions and May's confidence questions for cognitive ability an EFA in this research was able to show that the constructs of self-efficacy and confidence were indeed separate (see table 5.22).

7.3.1 Predictors of HOSE

The components of HOSE are often cited as key psychological resources, however there has been little research into what predicts them. This study performed regression analysis into what resources predicted the components of Hope, Optimism and Self-Efficacy. These were emotional resources, cognitive resources, self-consciousness, and mindfulness and openness:

7.3.1.1 Emotional Resources

The ability to regulate or control one's emotions was key resource identified by the focus groups as required for Psychological Safety. This study measured the extent to which individuals felt they had emotional energy left at the end of the day, or whether they felt "at the end of their rope" or "emotionally drained" from work. Results from this study showed that the participants with greater emotional resources had higher levels of Psychological Safety.

Emotional resources accounted for 42% of the variance in Optimism. This supports research suggesting that presence of a positive mood may be a signal that one's current resources are sufficient to deal with the task at hand. Positive mood has been associated with higher dopamine levels (Ashby, Isen, & Turken, 1999). Increased dopamine levels are associated with processing differences attributed to greater flexibility in the executive attention system, such as the ability to "switch set," or change one's understanding of a problem, enabling increased flexibility in judgment and behaviour (Isen, 1983, 2000; Isen et al.,

1987). It is possible that similar benefits accrue to optimists because of their characteristically more favourable mood. If this is the case, optimists might be better able to adjust their understanding of situations and problems to reflect new information, a processing difference that may impact their perceptions of Psychological Safety.

Indeed, previous research has shown that those experiencing emotional exhaustion view their colleagues and the organisation through "rust coloured glasses" (Maslach, 2003, p.5) displaying cynicism and depersonalisation (Atouba & Lammers. 2018; Maslach, 2003; Maslach, Schafeli & Leiter, 2001). Atouba and Lammers (2018) found a significant correlation between emotional exhaustion and cynicism in their study of IT workers in a US IT Company. Baumeister et al.'s (2007) ego-depletion theory would suggest that those who feel emotionally drained may not have the emotional resources to invest in broader and flexible thinking to go beyond an emotional response.

This research supports the view that emotional resources contribute significantly to Optimism, which was shown to predict both Psychological Safety and Hope.

7.3.1.2. Cognitive Resources

Cognitive resources accounted for 4% of the variance in Self-efficacy and 3% of the variance in Hope. These measured the extent to which individuals felt they were able to deal with the physical and mental demands of work. Cognitive Agility and Capabilities were identified by the focus groups as being required for Psychological Safety. Results of this study showed that employees with more cognitive resources had higher levels of Hope and Self-efficacy. This suggests that in having greater cognitive resources, individuals have the cognitive capacity to be able to identify pathways to goals and positively evaluate their ability to achieve them. This supports the work of Aspinwall, Richter and Hoffman (2001) who identified that those with greater cognitive resources were better able to process (possibly negative) facts but in a systemic way, creating more positive attitudes to their environment.

7.3.1.3 Self-Consciousness

Self-consciousness, added 1% to the variance in self-efficacy for employees.

As expected, the correlations between self-consciousness and other psychological resources measures were negative. Self-consciousness involves evaluating how others may perceive or judge you and is a process of directing attention to one's self (Fenigstein et al., 1975). If resources are considered to be finite, then directing them to one's self, would

suggest that there are fewer to invest in other evaluatory processes: for instance, those of the environment, goals, outcomes etc. Furthermore, Duval and Wickland (1973) argue that self-consciousness is a product of where ones attention is focused.

7.3.1.4 Mindfulness and Openness (LMS)

Cognitive Flexibility was identified as a key resource for Psychological Safety by the focus groups. For this study, there were moderate positive correlations between both cognitive flexibility measures, the HOSE components, resilience and the cognitive and emotional resources. Scatterplots illustrate a positive linear relationship between cognitive flexibility, and attitudes to Psychological Safety and Resilience. Openness (LMS) accounted for 12% of the variance in self-efficacy.

The LMS is a mindfulness questionnaire, and mindfulness concerns attentional focus and switching (Bishop et al., 2004) or the "stability of attention" (Weick & Sutcliffe, 2006, p.519). Research into improvements in attentional control through mindfulness have been mixed. Some studies finding Mindfulness programs led to improvements in attentional control (Jha, Krompinger & Baime, 2007; Malinowski, 2013). In contrast to this, Anderson, Lau, Segal and Bishop, (2007) found no change in participant's attentional control after attending a mindfulness program, although the study measured attentional control using the Stroop test. In this study a similar task switching exercise had a statistically insignificant relationship with cognitive flexibility measures. Nevertheless, being mindful enables both attentional focus as well as maintaining a broader awareness of the environment in such a way as to be open to novelty. It is then conceivable that this will increase your self-efficacy. In believing you are able to come up with different ideas or solutions, you may in turn feel you are able to deal with whatever may come your way.

In summary, the model resulting from the questionnaire data suggests that Psychological Safety and Resilience are predicted by evaluative processes underpinned by psychological resources.

7.4 Attitudes

The components of HOSE have been described as "cognitive sets" (Magalleta & Oliver, 1999), emotions (O'Sullivan, 2011) and "resources" (Bockorny & Youssef-Morgan, 2019; Luthans et al., 2010, 2013, 2017). In terms of Hobfoll's definition of resources, they could indeed be considered "centrally valued" or the "means to obtain centrally valued ends" (2002 p.307). However, definitions of Hope, Optimism and Self-Efficacy have consistently referred to expectations or belief systems:

Hope as a motive derived from a *belief* in successful agency and pathways (Snyder, 1989), Optimism: an *expectation* for the future (Carver & Scheier, 2010) and Self-Efficacy as an *"expectation*" or a "*conviction*" (Bandura 1977 p.141). Such beliefs are evaluative processes: Hope, Optimism and Self-efficacy are the outputs of the evaluative processes of the goals achievement, outcomes and one's capability respectively. Attentional Control is a process of selecting what to focus attention on. The meanings derived from these processes form attitudes (Greenwald, McGhee & Schwartz, 1998; Sweldens, Corneille & Yzerbyt, 2014; Walther, Nagengast & Trasselli, 2005) about a person, an object or even a thought and may subsequently determine behaviour (Olson & Kendrick, 2006; Reid, 2006; Walther et al., 2005).

There is debate as to how attitudes are formed and the extent to which they consciously created. Staats and Staats (1958) demonstrated how attitudes could be formed unconsciously using positive and negative word parings as conditional stimuli. Evidence from Neuroscience has identified the role of the amygdala in creating automatic responses to emotional stimuli and implicit learning (Stanley, Phelps & Banaji, 2008). Research on implicit learning (Lewicki, Czyzewska & Hoffman, 1987; Lewicki, Hill & Czyzewska, 1992) and classical conditioning (Olson & Fazio, 2001) suggests that learning can occur despite the participants having no knowledge of it; known as "evaluative conditioning". Here an unconditioned stimulus becomes conditioned through implicit learning, often produced experimentally through the use of picture pairing (Baeyens et al., 1992; Levey, & Martin, 1975; Walther et al., 2005). This process of automatic and quick processing is referred to as peripheral processing (Bohner, Erb & Siebler, 2008; Petty & Briñol, 2015; Sweldens, et al., 2014) or associate processing (Gawronski & Bodenhausen, 2006), requiring few cognitive resources, relying existing patterns of knowledge (Gawronski & Bodenhausen, 2006).

However, Petty and Cacioppo (1986) challenged this with their Elaboration Likelihood Model of Persuasion which posited that attitude creation could also be a result of a conscious cognitive process, referred to as systemic or central processing (Bohner et al., 2008; Petty & Briñol, 2015; Sweldens et al., 2014) or propositional processing (Gawronski & Bodenhausen, 2006) requiring cognitive processing for reflection, evaluation and value attribution. This suggests that the source of attitudes may vary. Where there is little cognitive thought employed (low elaboration), attitudes can be influenced by emotions, whereas the application of cognitive thought (high elaboration) may mediate emotions creating a more cognitive based attitude (Petty & Briñol, 2015). The extent to which an individual employs cognitive resources in the creation of attitude is dependent on the importance of the information as well as the availability of cognitive resources needed to evaluate the information (Cacioppo, Cacioppo & Petty, 2018; Wheeler, Briñol & Hermann, 2007). Indeed,

results of this research show a positive relationship between the amount of psychological resources and attitudes of Hope, Optimism and Self-efficacy.

For organisations, this might suggest that if employees are given enough time and space to consider organisational events, logic will prevail. Not necessarily. Research has shown that individuals use affect as information (Albarracin & Kumkale, 2003; Schwarz & Clore, 1983). Individuals evaluate information against what is already known or believed. The resulting affect has shown to impact the extent to which individual's process information. If positive feelings are generated, then the individual deems the information valuable, and therefore motivated to expend cognitive resources on further processing resulting in more "global processing" enabling the individual to see the "bigger picture" with widened attention (Albarracin & Kumkale, 2003; Clore & Huntsingerm, 2007; Huntsinger, Isbell & Clore, 2014). The reverse is true: for those experiencing negative affect, further cognitive processing is inhibited and therefore individuals adopt a narrower view (Albarracin & Kumkale, 2003; Clore et al., 2007; Huntsinger et al., 2014).

Emotions therefore impact judgements and beliefs formed from evaluative processes. Experiments with accounting students who were asked to judge the culpability of an accountancy firm in an organisation's bankruptcy demonstrated that the more emotive and negative the consequences of the bankruptcy was, the more the accountancy firm were deemed liable. Many experiments have replicated these findings: suggesting that positive moods result in big picture thinking, whereas those in a negative mood focus on the minutiae (Bodenhausen, Kramer, & Süsser, 1994; Clore & Huntsinger, 2007; Isbell, Burns, & Haar, 2005; Isen, Daubman, & Nowicki, 1987).

This may account for why organisational attempts to improve resilience through wellbeing and stress management initiatives, as with this training study, are not always successful. Extrinsic mechanisms including those provided to create Psychological Safety will only succeed if the resulting mechanisms and messages create a positive affect and the employees have sufficient psychological resources to evaluate them, thereby enabling the formation of positive attitudes. This supports the findings from the focus groups that Psychological Safety is not solely an organisational or team construct. Participants agreed that the responsibility for Psychological Safety lay with both employee and the organisation. Individual employees' attitudes were cited as determinants of whether Psychological Safety is perceived; in particular sense of self and self-efficacy.

So how do organisations manage or change attitudes? Although Bassili (2008) believes that strong attitudes are stable and resistant to change, changing already established attitudes has been shown to be possible (Bohner & Dickel, 2011; Petty & Brinol, 2010). However, to change attitudes or over-ride automatic thoughts self-control and attentional focus need to be applied in order to be able to

"reconfigure mental resources" (Kashdan & Rottenberg, 2010 p.866) and consider alternative information and view. However, this requires psychological resources (Baumeister et al., 1998, 2007). Psychological resources are considered to positively contribute to health and well-being (Schaufeli & Buunk, 2003; Schaufeli & Taris, 2014), not only because they enable employees to better respond to the demands that consume or deplete their energy, but also because they promote positive psychological states (Bakker & Demerouti, 2007; Desrumaux et al., 2015).

In one experiment participants were divided into groups, one of which was distracted by music or noise, thereby reducing their ability to engage psychological resources. They were all provided with a message that was either relevant or not relevant to them (providing high motivation or low motivation to process). Findings showed that when either motivation or ability (high distraction conditions) were low, participants used affect to determine attitude towards the message. However, when both were high, emotions had no influence on attitude, suggesting that although emotion may have been recognised by the participant, it could be overcome by a cognitive process that was employed to determine attitude (Albarracin & Kumkale, 2003).

Results of this study indicated that only one resource increased between t1 and t2: LMS. The LMS questionnaire measured engagement, novelty seeking and novelty producing. This may be a useful resource when consciously forming attitudes. Engagement indicates a conscious awareness of one's environment, noticing changes and the new. This suggests a conscious gathering of environmental information. Even if those changes may potentially be threatening, an increase in one's ability to produce novel solutions may enable a more positive evaluation of the situation. Indeed, LMS was shown to account for 13% of the variance in self-efficacy, the predominant predictor of Resilience.

These findings were supported by this research that indicated that the greater the cognitive and emotional resources available, along with increased openness, the more positive the attitudes of Hope, Optimism and Self-efficacy. This suggests that in order to apply conscious thinking to manage workplace emotions and attitudes employees need sufficient psychological resources to do so. Therefore, for employees to have the positive attitudes needed for Psychological Safety and Resilience, organisations and leaders need to ensure employees have the psychological resources needed to be able to form attitudes cognitively.

7.5 Implications for Organisations & Leaders

In defining Psychological Safety as a team construct, extant research has firmly placed the responsibility for an employee's Psychological Safety in the hands of the organisation. Although Edmondson (2003) recognised the intrapersonal aspect of Psychological Safety, little research has

been conducted in this area. This research supports the work of other studies in that the greatest contributor to Psychological Safety is the Meaningfulness. Therefore, the organisation still has a primary role to play in Psychological Safety. Where this study adds to the research is recognising that in addition to providing extrinsic mechanisms for Psychological Safety, for the mechanisms to be effective and well received, the organisation needs to operate in such a way as to ensure the development and maintenance of employee psychological resources.

Certainly organisations are making great strides into providing the means to ensuring employees have the psychological resources that can enable the positive attitudes needed for Psychological Safety and Resilience. However, creating an environment in which personal resources are preserved requires more than a well-being initiative; a holistic systematic approach across all functions of the organisations is needed, from the vision to processes, leadership to reward systems. A well-researched diagnostic model is that of the Burke-Litwin Causal Model of Organisational Performance and Change (Burke & Litwin, 1992). In defining transformational versus transactional mechanisms and including the external environment, the model is considered more comprehensive than the Galbraith STAR model (Kates & Galbraith, 2010) or McKinseys' seven S model (Peters & Waterman, 1982) whilst as the same time being simpler than a model such as the Nadler-Tushman Congruence model (Martins & Coetzee, 2009). In showing the cause and-effect relationships between the internal and external environments the model aids with both organisational effectiveness and change analysis (Burke & Litwin, 1992). Plotting the organisational implications of this study onto the model illustrates the holistic nature of creating an environment for the maintenance and development of employee psychological resources, the benefits of which this study has shown to be higher levels of Psychological Safety and Resilience. The following section is structured around the Burke-Litwin model (see figure 7.3). Findings from thie research will be applied to each level of the model.

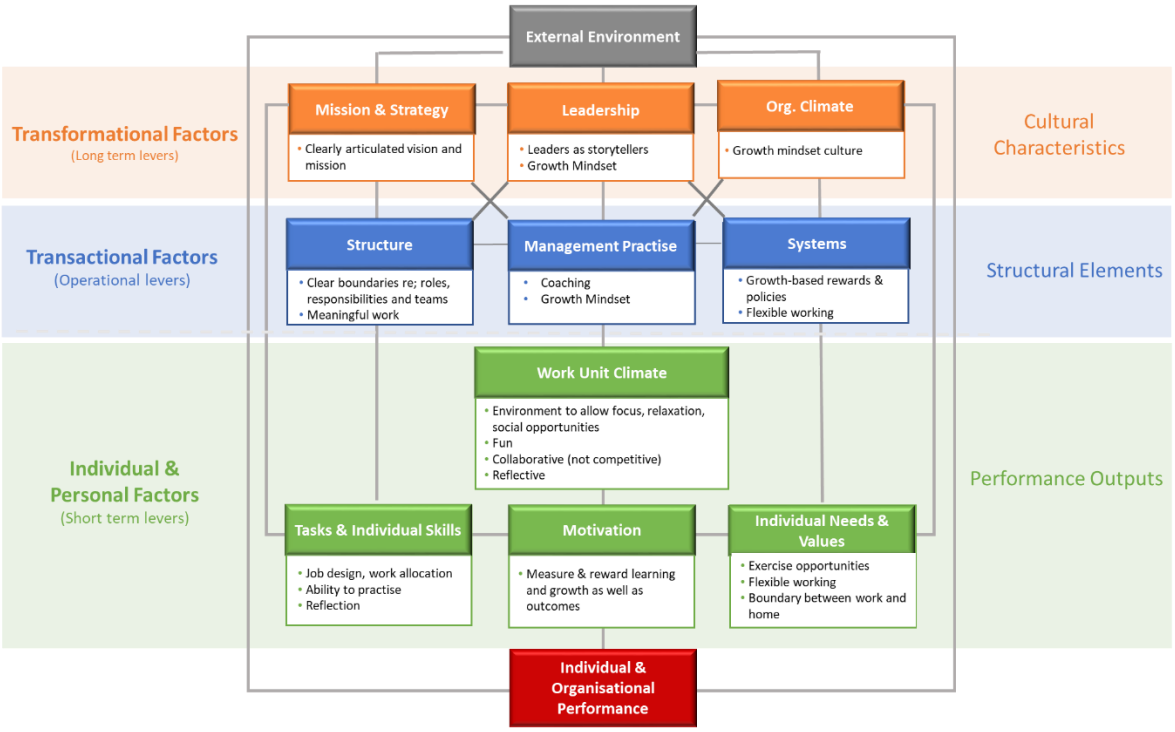


Figure 7.3 Organisational Mechanisms for the Maximising of Employee Psychological Resources Using the Burke-Litwin Model of Organisational Effectiveness (1992)

7.5.1 Transformational Level

The Transformational Level of the model refers to cultural characteristics. These include Vision and Mission, Leadership and Organisational Climate. Findings in this research provided evidence for organisations of the importance of a clear and credible vision and mission. A vision (future aspiration) and mission (current raison d'etre) together create a strategic gap from which the purpose and strategic goals of the organisation fall. Many organisations have one, or both of these, although often they are confused (Alegre et al., 2018; Bowen, 2018; Hurth, Ebert & Prabhu, 2018).

This research has shown that meaningful work is still the primary predictor of Psychological Safety. Employees who experience meaningful work and purpose have been shown to have improved psychological wellbeing (Hurth et al., 2018) and motivation (Hackman & Oldham, 1976). In creating a climate that is perceived as psychologically safe organisations should consider the role of Meaning when designing roles, articulating vision and societal contribution. It is meaning that helps create stability (Baldoni, 2011; Baumeister & Vohs, 2002: Quinn & Thakor, 2018) through the provision of a bigger purpose: a stable and consistent horizon that remains so no matter how choppy the sea. Meaning is particularly relevant given the findings that millennials (those born between 1981 and 2000) who are now entering the workplace seek meaningful work (Hoffman, 2018; Manuti, Curci & Van der Heijden, 2018). Since Hope and Optimism were also shown to predict Psychological Safety

this suggests that providing clear, realistic and achievable future outcomes are also important. Thus leaders need to be able to communicate vision and mission in a way that resonates with each employee.

Great leaders are able to tell stories, create meaningful connections with tasks and goals (Ready, 2002). Storytellers are able to articulate messages in a way that engages hearts and minds garner trust (Auvinen, Aaltio & Blomqvist, 2013; Harris & Barnes, 2006). The creation of a compelling narrative generates buy in (Denning, 2006) and influences others (Auvinen, Aaltio & Blomqvist, 2013) and increases the formation of positive attitudes (Hovland, Harvey & Sherif, 1957).

Organisations will likely argue that there is a plethora of communication occurring, however often communication is conflicting. Effective communication can reduce ambiguity, confusion and increase an employee's sense of efficacy (Maslach et al., 2001). Thus messages need to be consistent and as well as providing facts, be constructed to create positive affect (Greenwald et al., 2002). Of course, if employees lack the psychological resources to evaluative communication cognitively, responses are more likely to be based on emotion rather than consciously considered.

As discussed in Chapter 1, in the VUCA environment, it is innovation that differentiates the successful from the unsuccessful (Tushman & Nadler, 1986). An organisational climate free from threat is key to innovation and growth (West, 2000). To be able to see "mistakes" as a positive outcome requires an environment of learning which is both an antecedent and result of Psychological Safety. More than "organisational learning" which refers to processes or activities that provide new information or knowledge and is individual-focused (Tsang, 1997), an environment of learning refers to the way in which an organisation is run: a culture or mind-set, applicable to all employees (Kontoghiorghes, Awbre & Feurig, 2005). Such environments have been shown to lead to improved organisational performance (Goh, Elliott & Quon, 2012) through increased innovation and effective change (Kontoghiorghes et al., 2005), job satisfaction (Rose, Kumar & Pak., 2009) team relationships (Carmeli et al, 2009a, b; Edmondson, 1999, 2003) and employee's self-efficacy (Li & Yan, 2009). How the organisation is structured and operates is key to achieving this.

7.5.2 Transactional Level

7.5.2.1 Structure

In their drive to maintain flexibility, organisations are striving to be "boundary-less" (Direnzo et al., 2011; Welsh, 2001). In doing so, boundaries become deliberately blurred (Direnzo et al., 2011): be they between structures, geographies, teams or roles. Research has shown that loose boundaries lead to poorer team performance (Faraj & Yan, 2009;

McNeil, Mitchell & Parker, 2013). Without clear boundaries, employees can face increasing work-load, conflicting priorities and task uncertainty (Faraj & Yan, 2009). Furthermore, studies in healthcare have shown that when roles overlap, employees perceive a threat to their professional identity and the resulting conflicts impede team performance (McNeil et al., 2013). Porous boundaries risk task uncertainty in terms of outcomes and accountability which can have a negative effect on Psychological Safety (Faraj & Yan, 2009).

Therefore, organisations have a challenge: provide enough structure and clarity to offer a sense of security, a "home" for employees (De Smet et al., 2016 p.4) with a clear role, whilst also remaining flexible enough to meet the demands of a changing market.

7.5.2.2 Management Practise

How an organisation operates will influence the extent of innovation and learning. The principles of Dweck's Growth Mind-set (Dweck & Leggett, 1988), which promotes the benefits of seeing failures as learning and feedback rather than a reason to punish, sends a message that it is safe to try new things. This does not include failing repeatedly at the same thing: indeed if this is happening no learning is taking place! Growth mind-set culture acknowledges that everyone can learn and grow, but that not everyone is the same. Learning is measured and rewarded with the same importance as the outcome or result measuring the individual against themselves rather than others.

This does not suggest a Pollyanna "soft and fluffy" organisation. As Schuitema (2000) argues, the leader's role is to care and grow the individual, team and organisation. If an individual is compromising the growth of another, a team or the organisation, then the right thing to do is to manage that individual; providing an opportunity to grow and change. Schuitema (2000) acknowledges that the growth needed by an individual may need to take place outside of the organisation and thus removed from the organisation.

As part of the learning organisations specific mechanisms can be established to enable employees to practise skills and importantly reflect on the results and their learning (Edmondson, 2003; Senge, 1990). The process of reflection is considered key to learning (Argyris, 1994: Kolb, 2007). Organisations might consider structuring meetings or training events to enable reflection: creating spaces for reflection; enabling all employees to coach each other through a reflective process. Of course, in order to reflect, employees need time, space and psychological resources.

7.5.2.3 Organisational Systems

Systems such as processes and policies can be designed to develop and maximise employee psychological resources. However, recent trends in organisational operating models may inadvertently fall foul of this.

Flexible working is proving a popular benefit for employees. And yet the greatest barrier to flexible working is cited as the "negative attitudes among senior managers, line managers and supervisors" (CIPD, 2019c, p.30). Legislatively, in the UK, there have been great strides in the rights of employees to request flexible working. Although there are many ways to implement flexible working, recent report by the CIPD (Jan 2019c) indicates that it is most often considered to be part time work or working from home. Of all the different types of flexible working, the only arrangements that have increased over time have been zero hour contracts and working from home (CIPD, 2019c). For every type of flexible working, it is women with children who utilise them most.

This does however raise the issue of structures and in particular remote or virtual teams. Not all employees are keen to work from home alone, finding it isolating (Hunsaker & Hunsaker, 2008). The introduction of remote working has reduced social opportunities, including corporate social responsibility projects, albeit formally. Developing relationships and being part of a social group is beneficial to mental health (Thoits, 1995). Interestingly, findings from a four-day-week flexible working study by Henley Business School (Walker & Fontinha, 2019) showed that the extra day off was spent with family or friends. For those that need interaction, organisations and leaders need to provide mechanisms to connect regularly with others and feel part of a team. There is also research to suggest that operating remotely can cause retention issues (Weymouth et al., 2007).

Many remaining office locations are now open-plan which has been shown to cause distraction and stress (Haapakangas et al., 2018). As this research has demonstrated, attentional control is important for Resilience. Persistent distractions and noise can reduce our ability to focus. Thus, organisation should consider providing spaces where employees are able to focus without interruption. This can also promote opportunities for reflection, a key enabler for learning (Kolb & Kolb, 2005).

Long working hours are detrimental to our mental resources and mental health. A culture of long hours whereby sleep is compromised can reduce psychological resources (Sakamoto

et al., 2013; Tassi et al., 2006). More recently Nakata (2017) researched the impact of long hours (12+ hours) finding that those working long hours had a greater chance of displaying depressive symptoms and reduced job satisfaction.

Recent research by Henley Business School, surveyed 505 C suite business leaders and 2, 063 employees to determine the impact of the implementation of a four-day working week. Their findings showed that the reduced hours from a four-day week resulted in improved employee satisfaction, aided with retention, created cost savings whilst also maintaining quality and productivity (Walker & Fontinha, 2019). This suggests that when it comes to working hours and workplace performance, less means more.

The extent to which an individual can grow and develop both in terms of job related skill and personal development should be given as much importance as performance goals. For organisations to develop and grow, their people need to do the same. Establishing reward processes that only measure output rather than growth can create a workforce who merely apply 1 years' experience over many years, never growing or developing. Furthermore, many reward policies create fear (e.g. commission) or uncertainty (e.g. bonuses) the consequence of which is employee insecurity. Rather than investing psychological resources in developing, growing and innovating, these incentivise their deployment for self-preservation.

7.5.2.4 Individual Level: The Role of Goals

Given that Hope and Optimism predicted Psychological Safety, feeling positive about achievable outcomes appears to be key. Edmondson (2003) refers to "interpersonal consequences" (2003, p.8) of actions determining levels of Psychological Safety. Schulman (1999) recommends organisations recruit for optimists who have been shown to have lower neuroticism (Scheier, 1994; Smith et al., 1989), more resilient (Scheier et al., 1986), persevere more (Seligman, 1998) and have greater self-esteem (Wanberg & Banas, 2000). However, Schulman (1999) does concur that this alone is not sufficient (or ethical). Even for those with high trait optimism can at times be pessimistic as state optimism is a process of evaluating a particular event or situation (Kluemper et al., 2009; Peterson, 2000). And, as Kleumper et al.,'s (2009) research demonstrated, state optimism rather than trait optimism appears to be the greater predictor of task outcomes job outcomes. Therefore, to feel psychologically safe, employees need to be optimistic about consequences of a *specific*

event or interaction, even when a mistake is made (Carmeli et al., 2009a, b; Edmondson, 2003). This implies that goal setting is important in creating the hope, optimism and self-efficacy needed for Psychological Safety and Resilience. When setting goals, managers need to ensure that the employee is clear not only about what the final outcomes should be, but that they are able to identify pathways to achieving the goals and have the agency, the will and belief in their ability to achieve the goal. In developing such goals, employee attention on potential threats can be reduced (Vogt et al., 2013). Indeed, this research both supports and adds to the literature on goal setting theory (Locke et al., 1981).

Locke and Latham broke down goals into two main characteristics: Content (the outcome of the task) and Intensity (the resources required to achieve it). Thus, goals are considered to provide a sense of purpose and direction, clarity as to what is expected and the effort needed to motivate action (Locke et al., 1981). These elements could be represented by Hope: the agency and the pathway to achievement of a goal and Optimism about reaching the outcome. Goals provide a measure or standard against which an individual can appraise their capabilities and therefore their self-efficacy (Bandura, 1986; Wood & Bandura. 1989). Employee's performance is improved with clear achievable goals and self-efficacy (Cervonne, 1991). As goals form a central commonality between Hope, Optimism and Self-efficacy (see figure 7.4) it is apparent why Luthans defined these components as critical to workplace performance.

Locke and Latham (1990) maintain that self-efficacy is the antecedent to the setting of high personal goals although Garland (1983, 1985) disagrees, arguing that goals are an antecedent to self-efficacy. Research in this thesis supported Eden and Ravid's (1982) findings of a reciprocal relationship between them: Hope accounting for 34% of the variance in Self-efficacy and Self-efficacy accounting for 48% of the variance in Hope. If the key to goal setting theory are attitudes of hope and self-efficacy then this research argues that the achievement of goals is a result of the psychological resources that enable the

evaluative processes of Hope and Self-efficacy. Bernecker, Herrmann and Brandstätter (2017) recognise the role of mind-set in determining whether to pursue or abandon a goal, referring to a "deliberate mind-set" (2017, p.525) through which the cost-benefit of goal pursuit is evaluated against desirability and attainability. As suggested in this research, the formation of deliberate mind-sets require psychological resources.

Figure 7.4 Diagram Illustrating The Integral Role Of Goals In Hope, Optimism And Self-Efficacy.

Locke and Latham argue when dealing with the new or complex, the setting of high or difficult goals will "motivate people to search for new knowledge" (2006, p.265). In today's environment looking for new knowledge is critical. However, it has been found that this is only the case for those who are already experiencing high self-efficacy and have the resources available to achieve the challenging goal (Stajkovic & Luthans 1988; Thompson Hochwarter & Mathys, 1997). The ever- popular 'SMART' approach to goal setting can lead to a narrow focus (Locke & Latham, 2006) whereby employees (and leaders) fail to notice the ever-changing environment and consequently when to disengage from a goal. When psychological resources are low, attentional focus narrows (Petty & Briñol, 2015) including the ability to engage with the environment, focus attention on the relevant and seek novel solutions. A challenging goal without the necessary psychological resources may lead to lower self-efficacy and consequently, as this research shows, lower resilience.

As Scheier and Carver point out, situational factors can influence our assessment of our capabilities (1983). Goal Setting Theory does not consider the VUCA environment. Most goal-related research has been performed in controlled environments using students (Bandura & Wood 1989; Cervone, 1991; Earley & Lituchy, 1991; Locke et al., 1984; Wood & Bandura, 1989; Wood et al., 1990.), army recruits (Eden & Ravid, 1982) those experiencing mental health issues or heart attack survivors (Bandura, 1977). In these studies, the goals provided were clear and the outcome well defined. During experiments, there were no significant consequences of failing to meet the performance standards. Garland states that the research environment within which a participant (usually an undergraduate student) is

assigned a task by a superior (the researcher) is little different from a “real subordinate and a “real supervisor” (1983 p.21). However, the consequence of failing to meet performance standards in an organisational setting has far greater consequences when the ‘supervisor’ is your immediate boss. The importance of others’ view of your self-efficacy can impact your own view (Bandura, 1982) as shown in this research, self-consciousness predicting self-efficacy. Thus the experimental environment does not always reflect the current complex organisational environment in which goals are less clear and sometimes competing (Mohrman, 1999) and the pathways to achievement are muddied.

The manner in which goals are set can impact psychological resources. Autonomy in goal setting has been found to have a positive effect on self-efficacy (Locke et al., 1984). This might be somewhat counter-intuitive since Baumeister et al. (1998) suggest that in having to make a choice or decision can use up psychological resources (ego-depletion). However, Moller, Deci and Ryan (2006) were able to demonstrate that those who made their own decision autonomously persisted longer at a task than those assigned the same task, thus demonstrating that autonomy moderated psychological resource loss. However, autonomy is often lost when organisations impose stretch goals in line with the shareholder agenda, not those of the individual employees (Markovitz, 2012). As a result, employees may not have optimism that they will achieve a successful outcome. However, the outcome is only part of the formula for success. When setting goals, managers should consider ensuring that the employee is clear not only about what the final outcomes should be, but that they are able to identify pathways to achieving the goals and have the agency, the will and belief in their ability to achieve the goal.

Stajkovic and Luthans (1998) recommend that managers provide “accurate descriptions of the task employees are asked to perform” and that employees are “instructed” how to execute the task (p.255). However, this is contrary to the need for autonomy in goal setting. Also, it assumes that the manager knows what needs to be done and how. This is not always the case as managers’ deal with new challenges and problems in fluid environments. Goals are ever changing, unclear, (Li & Bagger, 2008; Schabracq & Cooper, 2000) or may change unexpectedly (Pulakos, 2015). Some may be team or departmental goals as organisations increasingly require their employees to work with broader, dispersed teams (Cartwright, 2003; Nash, 1994; Pulakos, 2015) and therefore the achievement of a goal is not always solely the responsibility of one employee. Consequently, the employee’s belief in their ability to action the goal may be compromised (Darnon et al., 2007; Li & Bagger,

2008; Schabracq & Cooper, 2000) possibly depriving the employee of a "sense of mastery and [increased] efficacy" (Earley & Lituchy, 1991 p.83).

The Goal Setting Theory does not take account of the VUCA environment in which employees are working, the impact of employee affect or mindset and takes a 'fixed mindset' approach to goal achievement. This research can begin to address these limitations thus building on Goal Setting Theory. The relationship between Self-Efficacy and Hope (goals) was supported. This suggests that setting higher more difficult goals without ensuring the employee has the psychological resources available may reduce Hope and Self-Efficacy which in turn may reduce Resilience and Psychological Safety.

Applying the findings of this research to the Burke-Litwin (1992) model has demonstrated that there are organisational mechanisms for maximising employee psychological resources that enable the attitudes required to support Psychological Safety and Resilience. This is important for organisations as it suggests that it is not only the processes provided that create Psychological Safety, it is how they are perceived and interpreted by employees. Indeed, a criticism of Edmondson's questionnaire (1999) may be in the aggregating of individual team member's scores which creates one measure for all. However, the meaning of organisational processes are the result of individual perceptions and cognitive processes (Baer & Frese, 2003; Glick, 1988; Jones & James, 1979). Organisational mechanisms for Psychological Safety may be perceived differently for different employees (Detert & Burris, 2007; Frazier et al., 2017; Jones & James, 1979; Parker et al., 2003; Zinsser & Zinsser, 2016) resulting in different impacts on individual employee beliefs and behaviours (Wanless, 2016a; Zinsser & Zinsser, 2016). Therefore, the success of organisational mechanisms for Psychological Safety and Resilience requires input from the organisation and its leaders and, as this research has shown, the employee themselves.

7.6 Implications for Employees: A Proposed Model

The provision of mechanisms to create Psychological Safety and Resilience are only part of the story. Using the "leading a horse to water" metaphor, organisations can provide the best trough on the market, which contains the purest water and is set in the most perfect environment in which to drink from the trough. The organisation can communicate about the quality of the water. Furthermore, our horse may even receive training on how best to drink from this nirvana-like trough, or have drinking from said trough set in its annual goals. However, none of these initiatives will guarantee our equine friend will indulge. Output from the focus groups agreed that the employee had a role to

play in creating their own Psychological Safety. So, what can employees do to help assure their Psychological Safety and Resilience in the context of VUCA environment?

Based on the findings from the focus groups, the questionnaires and the training intervention feedback, five key techniques are identified to enable employees to create and maintain their Psychological Resources. These are then constructed into a proposed model.

7.6.1 Self Care

There is no great revelation in the advice to sleep well, exercise and have "down" time. And yet, unless the individual takes responsibility for ensuring this, other activities such as work will encroach upon the time needed for these. That which is not gained within the workplace, the employee could seek elsewhere: If an employee is not gaining the social interaction they require from work, then find it outside of work. Take time to reflect, whether that be via mediation, mindfulness or merely reviewing the day's activities: not just to reflect on what happened during the day and what you intend to do about it but reflect and learn about the self thereby becoming more self-aware.

Research shows that exercise improves cognitive processes such as executive function and memory (Sanders et al., 2019), particular aerobic exercise (Sáez de Asteasuet al., 2017) although ten-Brinke et al. (2019) only support the improvements found in executive function, but not memory function. Organisations are recognising the importance of exercise in well-being, offering benefits such as gym membership. Of the 1078 respondents of the latest CIPD/Simplyhealth Well-Being at work survey (2019a), 33% offer of gym membership or exercise classes as an employee benefit.

7.6.2 Self-awareness

Being self-aware was a popular output of the focus groups. If Psychological Safety and resilience is a product of psychological resources, then gaining self-awareness to understand what replenishes and depletes our resources can aid our mental well-being. Being aware enough to recognise fatigue, stress or unhappiness is the first step in managing this. Regular reflection (mindfulness) and gaining feedback from others can help achieve self-awareness.

7.6.3 Self-Regulation

Being able to manage one's thoughts, to be able to focus attention on the positive rather than ruminate has been shown to maintain mental health (Derryberry et al., 2002b; Eysenck et al., 2007). Recognising that what we think about and how we feel is a choice, something that can be managed, was cited as an important contributor to Psychological Safety in the focus groups. Certainly, the

qualitative feedback from the training study also indicated that understanding this and managing automatic thoughts was one of the more useful aspects of the workshop.

Learning to apply the circle of influence also enables individuals to control where their attention goes. Worrying about that which is outside of the locus of control merely depletes resources and can cause stress or anxiety (Sandler & Lakey, 1982). Being able to identify the areas in which it is worth investing psychological resources in, helps focus thoughts and feelings towards that which is within one's locus of control.

7.6.4 Self-Fulfilment

Having meaning and purpose at work has been shown to improve motivation and commitment to work (Hackman & Oldham, 1976; Kahn, 1990; May et al., 2004). However, understanding your purpose in life, why you do what you do, had the greatest impact on the workshop participants. Understanding values, needs and motivations not only increased self-awareness but provided meaning.

Ironically, an important realisation for participants was to detach one's purpose from the job. Studies show that loss of job either through redundancy or retirement can lead to a sense of loss, feeling useless (Pinquart, 2002) or having no purpose (Sharpley, 1997). Yet it is not what we do that fulfils us, it's why we do it (Sinek, 2011). If an individual's purpose or identity is tied to a specific role, it is no surprise that fear of loss of the role can result in defensiveness and resistance to change. By understanding that your purpose and who you are is bigger than your job may help create a sense of freedom. Your job is a means to achieving your purpose and identity (thus the need for meaningful work). It is not your purpose or who you are.

7.6.5 Self-Improvement

A limited mind-set results in taking a binary approach to evaluating situations or ourselves; "right" and "wrong" or "good" and "bad", which may impact our self-esteem and self-efficacy. However, a growth mind-set has been shown to improve motivation, perseverance and self-efficacy in students (Aditomo, 2015; Dweck, 2009; Ng, 2018). Believing that we are not the finished article, that learning is lifelong enables us to choose to see "mistakes" as opportunity for learning rather than punishment.

This research suggests that these five aspects of the self are required to maintain psychological resources which was shown to lead to positive attitudes that contribute to Psychological Safety and Resilience. Although statistically, none of these were significant in the training study, qualitative

support was shown for each of these. In the focus groups, all of these were cited as intrinsic resources needed for an individual to maintain Psychological Safety.

Of course, the skills needed to improve one's own psychological resources, such as meditation, self-regulation etc. may need to be developed. Whether it be for students or employees, mechanisms to provide the techniques and tools to manage and maintain psychological resources may need to be offered. Organisations and some schools are already teaching resilience and well-being classes. However, alone they are not sufficient. As this research demonstrated, training would be futile if the individual does not have the psychological resources available to learn, process and change attitude.

This research suggests that these five "self" aspects may be mechanisms to help employees build their psychological resources. The longitudinal study demonstrated an increase in HOSE by teaching the topics within each of the "self" aspects (see figure 7.5). However, the changes were small and further research is needed here.

Figure 7.5 The "Self-Model" – Mechanisms For Individuals To Develop And Maintain Their Own Psychological Resources

Attentional control was placed in the centre of the model. There is much literature that refers to the importance of attentional control for psychological resources. The ability to select and control where one's attention is focused can enable each of these five aspects. Current literature provides support for the role of attentional control in achieving self-awareness (Chung, Su & Su, 2012; Duval & Wicklund, 1973; Evans et al., 2009; Silvia & Duval, 2001), Self-regulation or control (Chung et al., 2012; Derryberry 2002a; Duckworth & Steinberg, 2015; Kashdan et al., 2010; Stawski et al., 2010), learning (or unlearning) to be able to deal with the new or novel (Brook et al., 2016; Ionescu. 2012. Stawski et al., 2010) and values based behaviour (Kashdan & Rottenberg, 2010). The development of cognitive flexibility, particularly attentional control, has been shown to enable employees to adapt to new roles, tackle new tasks and problems (Brook et al., 2016; Ionescu. 2012; Kashdan et al., 2010; Louis & Sutton, 1991) and cope with negative stimuli (Derryberry, 2002b). Employees that demonstrate cognitive flexibility have been shown to be able to inhibit negative feelings and attitudes thereby creating less resistance to change (Chung et al., 2012). Finally, Stawski

et al. (2010) provided support for the hypothesis that cognitive flexibility enables adults to regulate their emotions, ”balance multiple roles, make quick decisions, use good judgment and reasoning, and navigate complex and novel tasks and situations” (p.340).

It seems that employees today, and in the future, would be more likely to maintain and even replenish their psychological resources if they were cognitively flexible so as to control their attention.

7.7 Implications for Education

An interesting and significant finding from the student data (although limited) was the difference in the quantity of resources between students and employees; employees having significantly more than students. Clearly this study on students was too small to draw any firm conclusions, however it has raised some questions. Specifically, when and how, during the transition from school/university into the workplace are these skills learnt? If these skills are what enables an individual to maintain their psychological resources, then leaving it to chance as to whether an individual will learn them seems a risky strategy. Indeed, some never learn these skills: many of us have known a person who is unable to control their emotions, or someone with a totally fixed mind-set. Perhaps it is worth considering what this might mean for our educational system. Should we be building the means of Hope, Optimism and Self-Efficacy into the school curriculum to ensure that building and maintaining psychological resources become a life skill. The principles of a growth mindset is being taught in some schools, however the measurements and standards of pass or fail to which students are expected to conform confound this. Personal progress and growth is not recognised as a success. As such the skills of reflection are rarely taught: even in this PhD, there is no requirement for reflection as to the personal learning and growth gained over the three-year study.

Clearly this size of this study is insufficient upon which to make such bold statements about the educational curriculum, however given the benefits of maintaining and developing psychological resources, perhaps it may be an area for further study.

7.8 Limitations and Further Research

To the author’s knowledge, this study has been the first to research the individual psychological resources needed for Psychological Safety and has added to the literature on resilience. In doing so it has identified areas for further research. The following section will identify the limitations of the studies and opportunities for further research.

An overall assumption upon which this study is based is that psychological resources are limited. As discussed in the literature review, there is debate concerning this, and taking this approach may be considered a limitation of the study. However, given the increasing demands on employees and the awareness of mental health issues in the workplace, this "worst case scenario" approach was taken. Naturally, future research into achieving limitless psychological resources, and importantly how to leverage this would be welcomed.

7.8.1 Measures

As none of the behavioural measures demonstrated statistical significance, all data in this study was based on a selection of established self-report questionnaires. As well as the challenge of respondent bias and the Kruger-Dunning effect (1999) a potential issue with the use of different questionnaires was the variety of measurement scales.

This research measured specific psychological resources from three models. However, there may be other psychological resources that better predict either Psychological Safety or Resilience. Although Self-Efficacy, Hope and Optimism are often cited as key psychological resources, there has been little research into what predicts them. This research begins to look at what is needed for the HOSE resources. Future research into the relationship between psychological resources may expand our understanding of the key resources and how to develop them, in particular the role of cognitive flexibility and mastery.

However, this research found the measurements of cognitive flexibility to be anomalous. Firstly, the practical experiments designed to measure attentional control and divergent thinking showed no significant relationship with any of the variables including the ACS and LMS measures. One may argue that the LMS and ACS are self-report and therefore the "impartial" tasks experiments may be the more objective measure. Alternatively, it may be that these experiments do not measure the same construct as the questionnaires.

Understanding the construct of a psychological resource may be key. For example, sense of humour has been associated with positive orientation to life (Kuiper, Martin & Dance, 1992), leadership performance in women (Schnurr, 2008) and health (Boyle & Joss-Reid, 2004). There are initiatives to develop humour such as the 7 Humour Habits Program based on the work of McGhee (1974) and the Humour to Cope and Connect Workshop (Baisley & Grunberg, 2019), however each of these develop humour by enabling cognitive skills such as emotional regulation, cognitive flexibility and cognitive mastery. Self-consciousness, a predictor of self-efficacy has been shown to be a consequence of attentional focus on the self (Duval & Wicklund, 1973; Fengistein et al., 1975). This raises a potential

for future research into the extent to which cognitive flexibility and cognitive mastery underpin other psychological resources.

As demonstrated when designing the workshop for the longitudinal study, developing the HOSE attitudes requires providing participants with a toolkit of strategies (Luthans et al., 2008a) which develop the "proximal outcomes" of Hope, Optimism and Self-efficacy (Luthans et al., 2010 p.50). Thus the workshop was designed to increase the psychological resources that were thought to contribute to these attitudes: the growth mind-set, purpose, managing "automatic thoughts" and locus of control. Had these been measured directly by using scales such as Dweck's Growth Mindset questionnaire (2000), Rotter's Locus of Control Scale (1966) and The Meaning of Life Questionnaire (Steger et al., 2006) perhaps results may have been more significant. However, the purpose was to increase attitudes for Psychological Safety and Resilience. Although there was an increase in HOSE and LMS results post workshop, in future it may be beneficial to measure the topics taught directly as well as attitudes and psychological resources in order to determine the most powerful tools for developing positive attitudes. Furthermore, as well as a greater number of participants, a longitudinal study may be useful over longer periods of time. A potential area for future research may be in understanding how and when employees learn or acquire psychological resources so that this can be proactively taught to students prior to joining the workplace. Given the rise in mental health issues for young people (Bethune, 2019) proactively equipping students with the skills for Psychological Safety and Resilience may offer a proactive solution. A longitudinal study of psychological resources and attitudes of 16 year olds through to early transition into the workplace and later workplace experiences may offer insight into the Psychological Safety and Resilience for both organisations and educational establishments alike.

7.8.2 Participants

Responses to questionnaires were low. Completion of questionnaires was most likely when they were completed as part of an exercise in a workshop. Remote completion impacted the return rate despite incentivisation. Future initiatives may wish to consider, face to face measurement at each completion time. A further tactic to increase response rates and sample sizes may have been to reduce the length of the questionnaire. For employees, Kahn's meaningfulness dimension was surveyed, adding a further 25 questions. Given the purpose was to assess intrinsic resources, this could have been omitted. However, its inclusion was able to confirm that traditional mechanisms of job significance and importance are still key to Psychological Safety, thus re-enforcing the role of organisations in Psychological Safety.

The extent to which the participants of both student and longitudinal study represent the general population may also be in question. Students were sourced from a prestigious private girl's school, privately educated pupils representing only 6.5% of UK school aged children (Independent Schools Council, 2019). The employee respondents in the longitudinal study were attending a degree in Business and Leadership, paid for by their employers. Given the investment involved by employers, it could be argued that having been selected for the program, these employees had already demonstrated self-efficacy, optimism and ability to meet goals. This may account for the lack of change in results between t1 and t2.

The inclusion of a control group for employees would provide a better indication of magnitude of effect and future longitudinal research might consider both increased diversity of participants and the inclusion of a control group to add further rigour to the studies.

Although students were not the primary target group for this student, the results indicated that students had fewer psychological resources as predictors of Psychological Safety and Resilience than employees. Given these findings it may have been useful to have included the sections of the Availability and Psychological Safety questionnaires that were omitted for students. The Availability measure for students omitted the three questions relating to "self-consciousness". For employees this accounted for 10% of the variance in availability. Similarly, the 10 co-worker questions omitted from the student Psychological Safety questionnaire, accounted for 14% of the variance in Psychological Safety for employees. To have reworded the self-consciousness and co-worker questions to be student-relevant may have provided an insight as to the extent to which students expend psychological resources in their relationships with peers.

Future research into the systematic implementation of growth mind-set and cognitive flexibility on both student and organisational performance, if shown to be positive, may change the experience of school for students and teachers as well as work for leaders and employees. Some schools are already teaching the concept of growth mindset, however the challenge is that how they are measured at school (in terms of pass or fail) and later within the workplace (win/lose, meet goal/fail to meet goal) falls foul of the principles of the growth mind-set. However, for organisations, a more relevant measure of a growth mind-set may be needed as Dweck's questionnaire is designed for children. Further research and development of a measure for employee growth mind-set may enable quantitative research into organisational performance.

An interesting observation posited early in the focus groups was that permanent employees felt no more psychologically safe than contractors, indeed sometimes less so. If Psychological Safety is a

product of organisational mechanisms such as secure jobs, investment in career development, relationship with team members, then what are the mechanisms for contractors, who may forgo these mechanisms, to feel safe and resilient? Without the organisational mechanisms, a contractor's Psychological Safety may be more intrinsically driven. Given the increasing propensity of VUCA organisations to use contractors (Moreno, 2019; Wakabayashi, 2019) this may be a useful area of future study. Similarly, the rise of remote working may impact Psychological Safety, given that relationships with team members and leaders remain key to Psychological Safety. Understanding differences in Psychological Safety of remote teams may also benefit leaders and how they manage dispersed teams.

8 Conclusion

Today's VUCA organisations strive to be lean and agile in order to maintain competitiveness. Employees are expected to be able to deal with the unknown, innovatively problem solve and adapt. A key requirement to do so is Psychological Safety. And yet, the traditional mechanisms of creating Psychological Safety, such as job descriptions, role clarity and stable team membership are now more fluid, agile and boundary-less to enable organisations to rapidly respond to changing environments. As such, for employees to rely solely on the organisation for the provision of their Psychological Safety may be fruitless. This study demonstrated that employees can develop psychological resources to enable their own Psychological Safety.

This research has also added to the literature by developing Luthans' Psychological Capital model. Resilience was shown to be a consequence of psychological resources, in particular attitudes, and therefore is better placed as an output of the model. Cognitive Flexibility, a key psychological resource for today's organisations was shown to be a worthy replacement for resilience.

Finally, an importantly to organisations, the research demonstrated that the psychological resources identified for Psychological Safety (and resilience) could be developed through the use of a face to face workshop.

8.1 Contribution to Knowledge and Practise

This study makes several contributions to the field of knowledge.

Firstly, the removal of resilience from the Psychological Capital model supports the extant literature arguing that resilience is a result of a combination of factors (Egeland et al., 1993; Glantz & Sloboda, 2002; Sutcliffe & Vogus, 2003). Furthermore, the poor contribution of resilience in regression analysis does add to the opacity surrounding the inclusion of resilience in the Psychological Capital model (see chapter 5). Prior to this study, evidence of increased personal resources leading to increased resilience was anecdotal, particularly in the context of the workplace (Britt, 2016; Gordon & Coscarelli, 1996; Kumpfer, 2002; Meredith et al., 2011; Park, 1998; Ryff & Singer, 2003; Sommer, 2016; Sutcliffe & Vogus, 2003). However, this study has shown that greater psychological resources lead to greater resilience.

The results of this study also contribute to our understanding of the constructs of Psychological Safety and Resilience from an individual perspective. Data suggested that it is attitude that predicts Psychological Safety and Resilience: how one chooses to interpret the environment and interactions

within in and where one chooses to focus attention. In doing so, this adds to the research on both Psychological Safety and Resilience that the individual has a role to play in their creation and are not solely products of organisational or group mechanisms. Psychological resources were shown to predict attitudes. An interesting addition to the field is the different predictors of Psychological Safety and Resilience. Resilience was predicted by cognitive resources, whereas Psychological Safety was a combination of cognitive and emotional psychological resources. This is an important differentiation for organisations when considering how to develop Psychological Safety and Resilience in employees.

Finally, the cognitive flexibility measures were shown to predict self-efficacy and resilience. This adds to the relatively new literature on the role of cognitive flexibility in the workplace, in particular the role of western mindfulness; i.e. awareness of one's environment, focusing ones attention and being open to novelty, particularly relevant in the context of VUCA organisations. In addition, this research had added to the literature by beginning to look at the relationship between psychological resources: what predicts self-efficacy, hope and optimism.

Although the premise of this study was that employees have a role to play in the creation of their Psychological Safety, the research has implications for both employees and organisations. Indeed, it has re-enforced the importance of how organisations manage their employees. For organisations, the availability of wellbeing programs and initiatives may not necessarily improve employee's Psychological Safety or Resilience. If attitudes determine Psychological Safety and Resilience, organisations should focus on ensuring that employees have the psychological resources available to be able to evaluate their environment cognitively rather than emotionally. At best this will help create positive attitudes, at worst an acceptance of events and the rationale for them. Having available psychological resources may enable negative events to be addressed with hope, optimism and self-efficacy.

Rather than relying on well-being programs to support employee mental health, manage so that the need for such programs is the exception rather than the rule. Management practises that proactively allow the maintenance and replenishment of psychological resources enabling Psychological Safety and Resilience may be more beneficial for both organisational and employee performance. Leaders can encourage learning and growth in a safe environment to improve self-efficacy, collaboratively set realistic goals that results in a reasonable and manageable workload, be clear on purpose, vision and communications.

The findings have implications for organisational training: often used as part of resilience or stress management. If resilience is a product of attitudes and psychological resources, then resilience per se

cannot be trained. It is the components that create resilience that need to be developed. However, traditional training courses, although providing useful techniques, may only be of benefit if the employee already has the psychological resources to be able to learn new information. Perhaps psychological resources may be better maintained or replenished through interesting purposeful work, time out and trusting relationships.

This research confirmed that employees also have a role to play in their Psychological Safety. To look solely to organisations for their own Psychological Safety and Resilience seems a passive approach to one's own mental health. Attitude is a choice. Employees can implement their own mechanisms to ensure they have the psychological resources to feel hopeful, optimistic and self-efficacious. Adoption of a growth mind-set, learning to focus attention on the constructive not the destructive and understanding one's purpose is not the same as ones job were shown to improve these elements. Organisations can provide information and teach these techniques, however it is up to the employee to choose to apply them.

Findings that may be of interest to educators were the results from the student data. Although the student cohort was small, the data indicated that the same attitudes as the employees predict Psychological Safety and Resilience. However, there was a noticeable difference in the number of psychological resources deployed for students. This raises questions as to how and when the resources and attitudes for Psychological Safety and resilience are formed and whether they can be developed before entering the workplace.

8.2 Study Limitations and Further Research Opportunities

A limitation of this study is the small sample sizes. Student responses were too small on which to perform a robust analysis, particularly the longitudinal study and for employees, although analysis was possible, gaining the numbers of participants proved challenging. Focus groups were small and planned sessions were repeatedly cancelled as, ironically work demands were too pressing. However, even as a small sample, the findings provide sufficient information to develop a business case for future in-house organisational studies.

The self-report nature of all the measures may have resulted in common method variance although a PCA suggested otherwise. However, the extent to which the participants represented the general population may be a limitation: for the longitudinal study, students were public school girls and the employees were those selected to attend a fully funded degree program. The general questionnaires

were randomly completed by an almost even split between male and female students and employees alike, although ethnicity of participants was almost entirely white. Further longitudinal studies that include diverse participants, data from multiple sources and a control group would add scientific rigour to future studies.

Several questions still remain to be answered.

The difference between students and employee resources levels was, although unsurprising, was an interesting area for future study. Where and when are psychological resources gained? How does one learn the skill of cognitive flexibility? To understand this may provide insight into preventative measures needed for stress-resilience for both students and employees. Particularly in the context of an aging workforce and the skills shortage, young employees who are already enabled with the resources and cognitive skills to thrive will be of benefit to organisations and economies.

An interesting area of future research is the specific working arrangements and how they influence psychological resources, Psychological Safety and Resilience. For example, what is the impact of remote or home working on levels of psychological resources? Does working from home improve resources or lessen them? If your boss is on a different continent, is your Psychological Safety greater or less than those working near her?

The nature of the employee's contractual relationship with the organisation was an aspect that was raised in the focus groups: what are the levels of resilience and Psychological Safety of contractors versus employees. What determines this? How does contracting and having a zero hour contracts differ and why?

In conclusion, this study has added to the body of knowledge on Psychological Safety, Resilience and Psychological Capital. To date defined as a group construct, this work contributes to existing knowledge by enhancing our understanding of Psychological Safety as an individual construct that can be achieved through the provision of psychological resources. In doing so, this creates the *ability* to "show and employ oneself" in the workplace (Kahn, 1990). The research also indicated that organisations still have a role to play to create the environment in which the individual is *willing* to "show and employ oneself" fully at work.

Finally, the study supports extant work on resilience as an outcome of the leveraging of psychological resources which can be improved through training interventions. However organisational practise should include a more holistic approach to the implementation of that taught in the workshop, such as growth mind-set, clear purpose and goals and ensuring robust mechanisms to enable employees to maintain and replenish their psychological resources.

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Appendices

Appendix A: Studies of Psychological Safety in Chronological Order

Author(s)	Date	Research Title	PS Measure	Participants	No. Participants	Industries
1. Kahn	1990	Psychological Conditions of Personal Engagement and Disengagement at Work.	Qualitative Study	Summer Camp Teams	16 counsellors	Leisure
				Architectural Firm	16 Employees	Architecture
2. Edmondson	1999	Psychological Safety and Learning Behaviour in Work Teams	Edmondson's initial Questionnaire	Office Design company	51 teams (421 individuals)	Manufacturing
3. Edmondson, Bohmer & Pisano	2001	Disrupted routines: Team learning and new technology implementation in hospitals.	Qualitative Study	Cardiac operating room teams	165 participants	16 Hospitals
4. Baer & Frese	2003	Innovation is not enough: climates for initiative and psychological safety, process innovations, and firm performance	Edmondson's PS questionnaire	Employees from mid-sized companies (between 100-900 employees)	165 employees from 47 companies.	manufacturing utilities, commerce and financial service sectors in Germany
5. Edmondson	2003	Psychological safety, trust, and learning in organizations: A group-level lens.	Edmondson's PS questionnaire	Amalgam of all previous Edmondson Studies	751 Employees	Manufacturing, Health Care
6. May, Gilson & Harter	2004	The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work	Kahn's work	Employees of an Insurance Firm	213 Employees	Financial Services
7. Edmondson & Mogelof	2006	Explaining psychological safety in innovation teams: Organizational	Edmondson's PS questionnaire	Teams had a management-designated team	238 knowledge workers from 26	Three industries (chemicals, high tech, and

		culture, team dynamics, or personality		leader who, in addition to supervising the team's work, was also an active member of the team	project teams in seven companies	consumer products).
8. Nembhard & Edmondson	2006	Making it safe: The effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams.	Four items from Edmondson's Questionnaire	Cross disciplinary teams in healthcare	1440	3 Neo Natal intensive care units across US and Canada
9. Carmeli	2007	Social Capital, Psychological Safety and Learning Behaviours from Failure in Organisations	Edmondson's PS questionnaire	33 organisations in both the industrial and public sectors	137 respondents working in 33 organisations	14 organisations are from the industrial sector and 19 from the service sector.
10. Halbesleben & Rathert	2008	The role of continuous quality improvement and psychological safety in predicting work-arounds	Edmondson' Questionnaire	Hopsitals	83 respondants	Health care
11. Roussin	2008	Increasing trust, psychological safety, and team performance through dyadic leadership discovery	Qualitative Study	Members of a HR team managed by one leader (who was the focus)		Media
12. Schepers, De Jong, Wetzels & du Ruyter	2008	Psychological safety and social support in groupware adoption: A multi-level assessment in education.	Edmondson & May et al.,	University Students with blended teaching methods – including collaborative software	361	University

13. Carmeli, Brueller & Dutton	2009	Learning Behaviours in the Workplace: The Role of High-quality Interpersonal Relationships and Psychological Safety	Edmondson's PS questionnaire	undergraduate and graduate students of academic institutions	212 students	Universi ty
14. Carmeli & Gittell	2009	High-quality relationships, psychological safety, and learning from failures in work organization	Edmondson's PS questionnaire	Employees	100 participants (47 from software co, 31 from finance and 22 electronics)	s operating in the software electronics, and finance industries
15. Kark & Carmeli	2009	Alive and creating: the mediating role of vitality and aliveness in the relationship between psychological safety and creative work involvement.	Edmondson's – adapted to refer to the participants organisation	Employees attending Part time social sciences degree at a university in Israel	129	banking and insurance, communication, electronics, food and beverages, and pharmaceutical and medical equipment
16. Walumbwa & Schaubroeck	2009	Leader Personality Traits and Employee Voice Behavior: Mediating Roles of Ethical Leadership and Work Group Psychological Safety	Edmondson's Questionnaire	Employees attending a leadership development program + Their supervisors	894 Employees 222 supervisors	Financial Services
17. Bstieler & Hemmert	2010	Increasing Learning and Time Efficiency in Inter-organizational New Product Development Teams.	Edmondson's PS questionnaire	?	67 companies.	S. Korean Machine

18. Bunderson & Boumgarden	2010	Structure and Learning in Self-Managed Teams: Why "Bureaucratic" Teams Can Be Better Learners.	Edmondson's PS questionnaire	Self-managed team members in high-technology firm.	231 employees from 40 teams	Technology
19. Ortega, Sánchez-Manzanares & Rico	2010	Team Learning and Effectiveness in Virtual Project Teams: The Role of Beliefs about Interpersonal Context	Edmondson's PS questionnaire	final year psychology students at a large Spanish University	144 in 48 teams	University *NB: students told to complete a task virtually. Simulation.
20. Zhang, Fang, Wei & Chen	2010	Exploring the role of psychological safety in promoting the intention to continue sharing knowledge in virtual communities.	May et al.,., (2004)	Virtual Communities (closed membership) – but socialised offline)	144 full-time working professionals enrolled in a part-time university program	University
21. Schubroeck, Lam & Peng	2011	Cognition-Based and Affect-Based Trust as Mediators of Leader Behavior Influences on Team Performance	Edmondson's PS questionnaire	Bank employees in Hong Kong and US	89 teams from Hong Kong branches, 102 teams from US branches.	Financial Services
22. Bradley, Postlethwaite, Klotx, Hamdani & Brown	2012	Reaping the Benefits of Task Conflict in Teams: The Critical Role of Team Psychological Safety Climate.	Edmondson's PS questionnaire	undergraduate students from a large business course at a Midwestern university	561 in 117 teams (random membership)	University
23. Kessel, Kratzer & Schultz	2012	Psychological safety, knowledge sharing, and creative performance in healthcare teams	Edmondson's PS questionnaire	Patients and healthcare professionals with rare diseases	73 teams, 149 professionals treating at least 1 patient	Healthcare

24. Ashauer & Macan	2013	How Can Leaders Foster Team Learning? Effects of Leader-Assigned Mastery and Performance Goals and Psychological Safety	Edmondsons PS Questionnaire	Students	213 students into 71 random groups of 3	University
25. Gong, Cheung, Wang & Huang	2012	Unfolding the Proactive Process for Creativity: Integration of the Employee Proactivity, Information Exchange, and Psychological Safety Perspectives	Adapted the affect-based trust scale from McAllister (1995).	Employees of a retail store in Taiwan	201 employees	Retail
26. Singh, Winkel & Selvarajan	2013	Managing diversity at work: Does psychological safety hold the key to racial differences in employee performance?	3-item scale by Chrobot-Mason and Aramovich (2004)	Employees and supervisors of a Midwestern US mid-size production organization.	165 matched-pair responses	Production
27. Martins, Schilpzand, Kirkman, Ivanaj, and Ivanaj	2013	A Contingency View of the Effects of Cognitive Diversity on Team Performance: The Moderating Roles of Team Psychological Safety and Relationship Conflict	Edmondson's PS questionnaire	Students enrolled in a Masters program.	736 students organised into 196 teams	University
28. Bienefeld & Grote	2014	Speaking up in ad hoc multi-team systems: Individual-level effects of psychological safety, status, and leadership within and across teams	Six items from the validated German version of the psychological safety scale (Baer & Frese, 2003)	Cockpit and Cabin crew members	1490	European Airline

29. Edmondson & Lei	2014	Psychological Safety: The History, Renaissance, and Future of an Interpersonal Construct	Meta Analysis of Extant Research			
30. Chen, Gao, Zheng & Ran	2015	A Review on Psychological Safety: Concepts, measurements, antecedents and Consequences variables	Meta – Analysis "measurement of psychological safety is mainly the 7 item scale by Edmondson(1999),			
31. Erkutlu & Chafra	2015	The mediating roles of psychological safety and employee voice on the relationship between conflict management styles and organizational identification	Edmondson's PS questionnaire translated into Turkish	13 multinationals in Turkey	1,023 employees	Multinationals
32. Liu, Liao & Wei	2015	Authentic Leadership and Whistleblowing: Mediating Roles of Psychological Safety and Personal Identification.	Edmondson's PS questionnaire translated into Chinese	Employees of a telecom Company in China	725 Employees	Telecoms
33. Leung, Deng, Wang & Zhou	2015	Beyond Risk-Taking: Effects of Psychological Safety on Cooperative Goal Interdependence and Prosocial Behavior.	Edmondson's PS questionnaire translated into Chinese	Employees who were attending a part time MBA at a University in China	266 Students	manufacturing, trading, and information technology
34. Simonet, Narayan & Nelson	2015	A Social-Cognitive Moderated Mediated Model of Psychological Safety and Empowerment.	Edmondson's PS questionnaire	Individuals involved in the church in any capacity	229	Church
35. Yan, Feng & Wu	2015	The Relationship between Task conflict and team learning: the critical role of psychological safety.	West & Anderson's 5 item questionnaire	Project Teams	238 employees in 72 teams	Not Stated

36. Zhou & Pan	2015	A Cross-Level Examination of the Process Linking Transformational Leadership and Creativity: The Role of Psychological Safety Climate.	Edmondson's PS questionnaire translated into Chinese	IT teams	468	Two IT Organisations in china
37. Cauwelier & Ribiere	2016	Team psychological safety and team learning: a cultural perspective.	Edmondson's PS questionnaire	Engineering employees	72 participants in 9 established teams (three teams of eight in each country)	engineering divisions in the USA, France and Thailand of a global organization
38. Chen, Zhang, Zhang & Xu	2016	Collectivism-oriented human resource management and innovation performance: An examination of team reflexivity and team psychological safety	Edmondson's PS questionnaire	Research teams	231 leaders (231 teams) and 904 team members	University
39. Chughtai	2016	Servant Leadership and Follower Outcomes: Mediating Effects of Organizational Identification and Psychological Safety	The three item scale developed by Detert and Burris (2007)	Full-time employees who were drawn from a large food company located in Pakistan.	174 employees	Food Company
40. Edmondson, Higgins, Singer & Weiner	2016	Understanding Psychological Safety in Health Care and Education Organizations: A Comparative Perspective	Edmondson's PS questionnaire	Teachers in Schools	20 000 teachers	545 Schools
				Medical Personnel	100 526 Hospital Personnel	4 medical centres
41. Erkutlu & Chafra	2016	Benevolent leadership and psychological well-being The moderating effects of psychological safety and psychological contract breach.	Edmondson's PS questionnaire	Employees of five start hotels in Turkey	1,009. Employees 92 Supervisors	Hotels

42. Kirk-Brown & Van Dijk	2016	An examination of the role of psychological safety in the relationship between job resources, affective commitment and turnover intentions of Australian employees with chronic illness	Edmondson's PS questionnaire re-worded to fit the organizational level ref; Baer & Frese (2003).	Full time employees who had worked in their current position for at least 2 years.	604	Employees living in Victoria or Melbourne Australia
43. Liu, Zhang, Liao, Hao & Mao	2016	Abusive supervision and employee creativity The mediating role of psychological safety and organizational identification.	Edmondson's PS questionnaire	employees and their supervisors from one company operating in a large state-owned enterprise in the city of Changsha, Hunan province in China,	423 employees	Parastatal
44. Mayfield, Tombaugh & Lee	2016	Psychological Collectivism And Team Effectiveness: Moderating Effects Of Trust And Psychological Safety	Edmondson's PS questionnaire	Graduate and upper-division undergraduate students enrolled in business and education courses in a large southern-central university.	260 students on 58 teams	University
45. Prime & Salib	2016	The Secret to Inclusion in Australian Workplaces: Psychological Safety.	Edmondson's PS questionnaire	Australian Professionals	250 Australian Professionals	Unknown
46. Rao-Nicholson, Khan, Akhtar & Merchant	2016	The impact of leadership on organizational ambidexterity and employee psychological safety in the global acquisitions of emerging market multinationals.	Measures leadership style	Case study analysis	105 organisations	Indian and Chinese Multinationals

47. Zinsser & Zinsser	2016	Case Studies of Preschool Psychosocial Safety Climates	Interviews	Teachers in a Pre-School	16	School
48. Walters & Diab	2016	Humble Leadership: Implications for Psychological Safety and Follower Engagement	Edmondson's PS questionnaire	Employees (recruited via Amazon's MTurk)	140 participants	?
49. Wanless	2016a	Bringing Psychological Safety to the Field of Human Development: An Introduction.	Discussion articles			
50. Wanless	2016b	The Role of Psychological Safety in Human Development.				
51. Zhang	2016	Corporate Ethics and Ethical Judgment of Earnings Management-Psychological Safety as Mediator.	Not stated	Employees of a corporation	348 Respondent's	Not stated
52. Frazier, Fainshmidt, Klinger, Pezeshkan & Vracheva	2017	Psychological Safety: A Meta-Analytic Review And Extension	Edmondson's PS questionnaire	Published papers	78 published studies, 21 doctoral dissertations, and 18 unpublished working papers	Organisations
53. Hu, Erdogan, jiang, Bauer & Liu	2018	Leader Humility and Team Creativity: The Role of Team Information Sharing, Psychological Safety, and Power Distance	Edmondson's PS questionnaire	work teams and team leaders	354 members from 72 teams	11 information and technology companies in a major city in Northern China.
54. Lenberg & Feldt	2018	Psychological Safety and Norm Clarity in Software Engineering Teams	Edmondson's PS questionnaire	Software engineers	38 teams	5 Swedish Software Organisations

55. Swain	2018	Effect S Of Leader Humility On The Performance Of Virtual Groups	Edmondson's PS questionnaire	From Amazon MTurk - Namely, in Study 2	637 = participants asked to "imagine" they were part of a virtual team 147 from a virtual	Amazon MTurk -
56. Triplett & Loh	2018	The moderating role of trust in the relationship between work locus of control and psychological safety in organisational work teams	Edmondson's PS questionnaire	adult workers employed in construction companies specialising in mining, oil, and gas within Western Australia	131	construction companies
57. Vandekerkhof, Steijvers, Hendriks & Voordeckers	2018	Socio-Emotional Wealth Separation and Decision-Making Quality in Family Firm TMTs: The Moderating Role of Psychological Safety	Edmondson's PS questionnaire	Employees from family firms with min of 20 employees, and min of three managers.	300 participants from 55 family firms.	Private Family Firms in Belgium
58. Harvey, Johnson & Edmondson	2019	Interplay between learning orientation, open-mindedness, and psychological safety in team learning	Edmondson's PS questionnaire	Employees in a financials service company in Canada	58 sales teams of between 4- 47 members	Financial Services
59. Sun & Huang	2019	Psychological capital and innovative behavior: Mediating effect of psychological safety	Edmondson's PS questionnaire	Teachers	136 full-time teachers	University
60. Han, Lee & Beyerlein	2019	Developing Team Creativity: The Influence of Psychological Safety and Relation-Oriented Shared Leadership	Edmondson's PS questionnaire	Graduates/undergraduates in educational HR development department	260 students	University

Appendix B: Summary of Resource Models

Model	Creator	Key Concepts
Sense of Coherence	Antonovsky (1979)	(a) the sense that one can usually predict one's future, (b) the ability to derive meaning from important aspects of one's life, and (c) and the sense that powerful forces tend to serve one's benefit Not well proven though
Personality Hardiness	Kobasa (1979)	(a) a sense of control over life's vicissitudes, (b) a sense that stressors represent challenges rather than threats, and (c) a sense of commitment to life tasks.
The Job Strain Model Demand – Control Model (DCM)	Karasek, (1979, 1998)	Psychological strain results not from the joint effects of the demands of a work situation and the range of decision-making freedom (discretion). These represent work load demands, conflicts or other stressors and constraints. The individual's job decision latitude is the constraint which modulates the release of "stress" into action. Thus, this is a stress-management model of strain which is environmentally based.
The Resource Fit Model	French, Rodgers, & Cobb,(1974) French, Caplan & Van Harrison, (1982)	Saw resources as beneficial to the extent they saw the degree of fit, or lack of fit, between demands and coping abilities as a determinant. Their contribution was the concept that resources existed within an ecological backdrop
Cognitive Adaptation Theory	Taylor (1983)	Individuals who are able to adjust well to stressful life events are those who are high on optimism, self-esteem and personal control. Process of adaptation: 1. Search for meaning in the experience 2. Attempt to gain control of the situation in order to gain sense of mastery over life 3. Restoring self-esteem through self-enhancing evaluations Mainly used in health studies (Helgeson 1999,2003) but also in org change (Wanberg and Banas 2000 cited in Van Den Heuvel, Demerouti, Bakker and Schaufeli 2010 pp129)

Transactional Stress Model	Lazarus & Folkman (1984)	The state in which resources were overtaxed or lacking as creating stress, leading to mobilization of appraisal and coping processes. Emphasis on appraisal and coping: they recognised the role of people's personal and social resources to enable this.
SOC (Selective Optimisation with compensation)	Baltes (1987) Baltes & Baltes, (1990)	People possess resources (mental, physical, social, and environmental) that are limited at any specific point in time. During the life span, people face opportunities (e.g., education, promotion) and demands (e.g., illness and physical deterioration) that require choices about the allocation of these limited resources. To do so, people apply management strategies of (1) selecting the goals to pursue (2) optimizing and using goal relevant means (3) using compensatory means to maintain goal attainment when previously employed resources are no longer available or blocked. SOC theory has been applied to research on career success (e.g., Wiese, Freund, & Baltes, 2002), and recently used to examine work–family conflict and facilitation (e.g., Baltes & Heydens-Gahir,
Conservation of Resources	Hobfoll (1989)	COR theory posits that people seek to obtain, retain, and protect resources and that stress occurs when resources are threatened with loss or lost or when individuals fail to gain resources after substantive resource investment. This places the acquisition and facilitation of resources as a central motivational construct. Resource loss is central to the stress experience. Resource gain, in turn, becomes more salient in the face of resource loss Resources are depicted as largely sociocultural framed rather than individual and hence most perceptions are seen as common among members who share a cultural niche (Hobfoll, 1988, 1998). Resource caravans: resources, or their lack, tend not to exist in isolation, but rather will combined for example, individuals with high self-esteem will also possess a stronger sense of mastery and have better functioning social support systems (Cozzarelli, 1993; Rini et al.,., 1999).

	Holahan & Moos, (1991) Holahan, Moos, Holahan & Cronkite (1999)	A large body of evidence supporting this. Studies over 10 years. Their findings strongly suggest that the contribution of resources is causal, as well as the fact that resources tend to generate other resources. Furthermore, their results clearly indicate that lack of resources tends to undermine resource stability and positive psychological outcomes.
Effort-reward imbalance (ERI) model	Siegrist(1996)	It refers to the reward, rather than the control structure of work. The ERI-model assumes that job strain is the result of an imbalance between effort (extrinsic job demands and intrinsic motivation to meet these demands) and reward (in terms of salary, esteem reward, and security/career opportunities – i.e. promotion prospects, job security and status consistency). The basic assumption is that a lack of reciprocity between effort and reward (i.e. high effort/low reward conditions) will lead to arousal and stress (cf. equity theory; Walster et al.,., 1978), which, in turn, may lead to health risks. Thus, having a demanding, but unstable job, achieving at a high level without being offered any promotion prospects, are examples of a stressful imbalance (De Jonge et al.,., 2000). ERI-model introduces a personal component : Over commitment is defined as a set of attitudes, behaviours and emotions reflecting excessive striving in combination with a strong desire of being approved and esteemed. According to the model, over commitment may moderate the association between effort-reward imbalance and employee wellbeing. Thus, personality is expected to be able to further qualify the interaction between effort and reward.
Psycap	Luthans & Church, (2002)	Higher order construct that operationalises Positive Organisation Behaviour movement, focusing on the strengths of individuals. Considered state like therefore developable. Concerns about Psychological Capital model's discriminate validity (Little, Gooty and Nelson 2007).
Positive Org Behaviour	Bakker& Schafeli, (2008) Luthans (2002)	Positive attributes of people and organisations: "the study and application of positively orientated human resource strengths and psychological capacities that can be measured, developed and effectively managed for performance improvement (Luthans, Youssef and Avolio 2007 pp10).
Key Resources:		- "Internal control": Seligman 1975 - Mastery (Pearlin and Schooler 1978) - Self-Efficacy (Bandura 1997) - Dispositional Optimism (Carver and Scheier 1998)

		- Self-Esteem – Rosenberg 1965 - Goal pursuit Brandtstadter and Renner 1990 and Heckhausen and Schultz 1995) - Tenaciousness (Brandtsta¨dter & Renner, 1990; Snyder, 2000) vs Learned Helplessness (Seligman 1975) - Social Support (Sarason, sarason and Shearin 1986, Barrera) - Self Esteem/Optimism and sense of control = exchangavble resources (Cozzarelli ’93) - Mastery, Optimism and Self-Esteem – Rini et al., 1999 - Resilience (Hobfoll 1998)

Appendix C: Hackman and Oldhams Job Diagnostic Survey (Short Version)

From : Hackman, J. R., & Oldham, G. R. (1974). The job diagnostic survey: An instrument for the diagnosis of jobs and the evaluation of job redesign projects. Pp 66 – 78

SECTION ONE

1. To what extent does your job require you to work closely with other people (customer, clients or people in related jobs to your own organisation)?

1	2	3	4	5	6	7
Very little: dealing with other people is not at all necessary in doing the job			Moderately: some dealing with others is necessary			Very much: dealing with other people is an absolutely essential and crucial part of doing the jobs

2. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own, how to go about doing the work?

1	2	3	4	5	6	7
Very little: the job almost gives me no personal "say" about how and when the work is done			Moderate autonomy: many things are standardised and not under my control, but I can make some decisions about the work			Very much: the job gives me almost complete responsibility for deciding how and when the work is done.

3. To what extent does your job involve doing a whole and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work which is finished by other people or by automated machines?

1	2	3	4	5	6	7
My job is only a tiny part of thee overall piece of the work: the results of my activities cannot be seen in the final product or service			My job is a moderate-sized "chunk" of the overall piece of work: My own contribution can be seen in the final outcome			My job involved doing the whole piece of work from start to finish@: the results of my activities are easily seen in the final product or service

4. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

1	2	3	4	5	6	7
Very little. The job requires me to do the same routine things over and over again			Moderate variety.			Very much; the job requires me to do many different things, using a number of different skills and talents

5. In general, how significant or important is your job:? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1	2	3	4	5	6	7
Not very significant: the outcomes of my work are NOT likely to have important effects on other people			Moderate significance			Highly significant: the outcomes of my work can affect other people in very important ways..

6. To what extent do managers or co-workers let you know how well you are doing on your job?

1	2	3	4	5	6	7
Very little: people almost never let me know how well I am doing			Moderately: sometimes people may give me “feedback”; other times they may not.			Very much: managers or co=workers provide me with almost constant “feedback” about how well I am doing

7. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual *work itself* provide clues about how well you are doing – aside from any “feedback” co=workers or supervisors may provide?

1	2	3	4	5	6	7
Very little: the job itself is set up so I could work forever without finding			Moderately: sometimes doing the job provides feedback to			Very much: the job is set up so that I get al.,most constant “feedback” as I

out how well I am doing	me: sometimes it does not..	work about how well I am doing.

SECTION TWO

Indicate whether each statement is an accurate or an inaccurate description of your job.

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

1. The job requires me to use a number of complex high level skills
2. The job requires a lot of co-operative work with other people
3. The job is arranged so that I do NOT have the change to do an entire piece of work from beginning to end
4. Just doing the work required by the job provides many chances for me to figure out how well I am doing
5. The job is quite simple and repetitive
6. The job can be done adequately by a person working alone – without talking or checking with other people
7. The supervisors and co-workers on this job almost never give me any feedback about how well I am doing
8. This job is one where a lot of other people can be affected by how well the work gets done
9. The job denies me any chance to use my personal initiative of judgement in carrying out the work
10. Supervisors often let me know how well they think I am performing the job
11. The job provides me the chance to completely finish the pieces of work I begin
12. The job itself provides very few clues about whether or not I am performing well
13. The job give me considerable opportunity for independence and freedom in how I do the work
14. The job itself is NOT very significant or important in the broader scheme of things

SECTION THREE

Each of the statements below is something that a person might say about his or her job. You are to indicate your own personal <u>feelings</u> about your job by marking how much you agree with each of the statements.

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

1. My opinion of myself goes up when I do this job well
2. Generally speaking, I am very satisfied with this job
3. I feel a great sense of personal satisfaction when I do this job well
4. I frequently think of quitting this job
5. I feel bad and unhappy when I discover that I have performed poorly on this job
6. I am generally satisfied with the kind of work I do in this job

7. My own feelings generally are not affected much one way or the other by how well I do on this job

SECTION FOUR

Now please indicate how satisfied you are with each aspect of your job listed below. Once again write the appropriate number in the blank beside each statement

1	2	3	4	5	6	7
Extremely dissatisfied	Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Satisfied	Extremely Satisfied

1. The amount of job security I have
2. The amount of pay and fringe benefits I receive
3. The amount of personal growth and development I get doing my job
4. The people I talk to and work with on my job
5. The degree of respect and fair treatment I receive from my boss
6. The feeling of worthwhile accomplishment I get from doing my job
7. The chance to get to know other people while on the job
8. The amount of support and guidance I receive from my supervisor
9. The degree to which I am fairly paid for what I contribute to this organisation
10. The amount of independent thought and action I can exercise in my job
11. How secure things look for me in the future in the organisation
12. The change to help other people while at work
13. The amount of challenge in my job
14. The overall quality of supervision I receive in my work.

SECTION FIVE

Listed below are a number of characteristics which could be present on any job. People differ about how much they would like to have each on present in their own jobs. We are interested in learning how much you personally would like to have each one present in your job.

Using the scale below, please indicate the degree to which you would like to have each characteristic present in your job. NOTE: the numbers on this scale are different from those used in previous scales.

4	5	6	7	8	9	10
Would like having this only a moderate amount (or less)			Would like having this very much			Would like having this extremely much.

1. High respect and fair treatment from my supervisor
2. Stimulating and challenging work
3. Chances to exercise independent thought and action in my job

4. Great job security
5. Very friendly co-workers
6. Opportunities to learn new things from my work
7. High salary and good fringe benefits
8. Opportunities to be creative and imaginative in my work
9. Quick promotion
10. Opportunities for personal growth and development in my job
11. A sense of worthwhile accomplishments in my work

MARKING

1. Job Dimensions: Objective characteristics of the job itself:

A. **Skills variety**: The degree to which a job requires a variety of different activities in carrying out thw ork which involved the use of a number of different skills and talents of the employee:
   a. Average the following items:
      - Section 1 #4
      - Section 2 #1
      - Section 2 #5 (recversed scoring i.e. subtract the number entered by the respondent from 8)

B. **Task Identity**: The degree tow hcih the job requires the completion of a while and identifieablepiece of work i.e. doing the job from beginig to end with a visitinble outcome:
   a. Average the following items:
      - Section 1 #3
      - Section 2 # 11
      - Section 2 # 3 (reversed scoring)

C. **Task Significance**: The degree to which the job has a substantial impact on the lives or work of other people – whether in the immediate organisations or external environment
   a. Average the following items:
      - Section 1 #5
      - Section 2 #8
      - Section 2 # 14 (reversed scoring)

D. **Autonomy:** The degree to which the job provides substantial freedom, independence and discretion to the employee in scheduling his work and in determining the procedures to be used in carrying it out
   a. Average the following items:
      - Section 1 #2
      - Section 2 #13
      - Section 2 #9 (reversed scoring)

E. **Feedback from the Job Itself:** The degree to which carrying out the work activiites required by the job results in the employee obtaining information about the effectiveness of his or her performance:
   a. Average the following
      - Section 1 #7
      - Section 2 #4

- Section 2 #12 (reversed scoring)

F. **Feedback from Agents:** the degree to which the employee receive information about his or her performance effectiveness from supervisors of from co-workers. (This construct is not a job characteristic per se and is included only to provide information supplementary to construct E above)
   a. Average the following items
      - Section 1 #6
      - Section 2 #2
      - Section 2 #6 (reversed scoring)

2. Affective Responses to the Job: the private affective reactions or feelings an employee gets from working on his job:

a. **General Satisfaction**: An overall measure of the degree to which the employee is satisfied and happy in his or her work
   i. Average the following items from section 3: #2, #6 and #4 (reversed scoring)
b. **Internal Work Motivation** : The degree to which the employee is self-motivated to perform effectively on the job
   i. Average the following items from section 3 : #1,#3,#5 and#7 (reversed scoring)
c. **Specific Satisfaction:** these short scales tap several specific aspects of the employees job satisfaction:
   i. Pay Satisfaction: Average items #2 and #9 of section four
   ii. Security Satisfaction. Average items #1 and'11 of section four
   iii. Social Satisfaction. Average items #4,#7 and #12 of Section four
   iv. Supervisory Satisfaction. Average items #5,#8 and #14 of section four
   v. Growth Satisfaction. Average items #3 #6 #10 and '#13 or section 4

3. **Individual Growth Need Strength:** The scale taps the degree to which an employee has strong vs weak desire to obtain growth satisfactions from his or her work:
   a. Average the six items from section five listed below. Before averaging, subtract 3 from each item score. This will result in a summary scale ranging from one to seven. The items are: #2, #3, #6, #8, #10, #11

4. **Motivating Potential Score:** A score reflecting the potential of a job for eliciting positive internal work motivation on the part of employees (especially those with high desire for growth need satisfaction) is given below:

$$\text{Motivating Potential Score (MPS)} = \left[\frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3}\right] \times [\text{Autonomy}] \times [\text{Feedback from the job}]$$

Appendix D: Email from Luthans

RE: PsyCap Questions

Fred Luthans <fluthans@unl.edu>

Wed 14/02/2018, 16:36

Sam Mather

Inbox

You forwarded this message on 15/02/2018 10:43

Annual Reviews PsyCap an Evidence-Based Approach.pdf
377 KB

Show all 1 attachments (377 KB) Download
Save to OneDrive - University of Reading

Sam the expert panel members were colleagues and doctoral students. Yes we largely treat confidence and efficacy interchangeably with no specific roles in mind. I have attached our latest review of PsyCap and remember you must obtain permission for use of the PCQ at www.mindgarden.com (12 or 24 item versions, free for redearch)

From: Sam Mather [mailto:S.A.Mather@pgr.reading.ac.uk]
Sent: Wednesday, February 14, 2018 4:52 AM
To: Fred Luthans <fluthans@unl.edu>
Cc: Patricia Riddell <sxsridel@reading.ac.uk>
Subject: PsyCap Questions

Dear Dr Luthans

Firstly, thank you for your work on positive psychology and in particular PsyCap. It is beginning to form the basis of my PhD study, particularly how PsyCap applies in todays "VUCA" organisations. Specifically I am looking at how it may (or may not!) contribute to an employee's sense of Psychological Safety, given that we can no longer rely on organisations to provide us with traditional mechanisms of safety.

I would like to ask two questions in relation decisions about the questions in your PCQ if I may.

1. Six questions were selected from Wagnild and Youngs Resilience questionnaire by "an expert panel". Are you able to tell me more about this expert panel? Who were they, what was the criteria they used in selecting the final 6 questions?

2. I note when measuring Self -Efficacy, the questions begin with "I feel confident.....".Do you have any more information on this? I this I see that work by yourself and Stajkovic seem to use self-efficacy and confidence interchangeable. I would argue that a questions such as "I feel confident contributing to discussions about the company's strategy" or "I feel confident contacting people outside the company (e.g., suppliers, customers) to discuss problems" may have the answer "no" but would not necessarily mean they feel any less able to do their job. Were these questions designed with specific roles in mind?

I would appreciate any clarity you can provide me on these questions.

Many thanks for your time.

Kind Regards

Sam

Sam Mather

PhD Student
School of Psychology and CLS
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University of Reading
Reading RG6 6AL

Appendix E: The Psychological Capital Questionnaire

Below are statements that describe how you may think about yourself right now. Use the following scales to indicate your level of agreement or disagreement with each statement.

(1 = Strongly disagree, 2 = disagree, 3 = somewhat disagree,4 = somewhat agree, 5 = agree, 6 = strongly agree)

1. I feel confident analyzing a long-term problem to find a solution.

2. I feel confident in representing my work area in meetings with management.

3. I feel confident contributing to discussions about the company's strategy.

4. I feel confident helping to set targets/goals in my work area.

5. I feel confident contacting people outside the company (e.g., suppliers, customers) to discuss problems.

6. I feel confident presenting information to a group of colleagues.

7. If I should find myself in a jam at work, I could think of many ways to get out of it.

8. At the present time, I am energetically pursuing my work goals.

9. There are lots of ways around any problem.

10. Right now I see myself as being pretty successful at work.

11. I can think of many ways to reach my current work goals.

12. At this time, I am meeting the work goals that I have set for myself.

13. When I have a setback at work, I have trouble recovering from it, moving on.(R)

14. I usually manage difficulties one way or another at work.

15. I can be "on my own," so to speak, at work if I have to.

16. I usually take stressful things at work in stride.

17. I can get through difficult times at work because I've experienced difficulty before.

18. I feel I can handle many things at a time at this job.

19. When things are uncertain for me at work, I usually expect the best.

20. If something can go wrong for me work-wise, it will.(R)

21. I always look on the bright side of things regarding my job.

22. I'm optimistic about what will happen to me in the future as it pertains to work.

23. In this job, things never work out the way I want them to.(R)

24. I approach this job as if "every cloud has a silver lining."

Source: Luthans, F., Avolio, B., Avey, J., & Norman, S. (2006). Psychological capital: Measurement and relationship with performance and satisfaction (Working Paper No. 2006–1). Gallup Leadership Institute, University of Nebraska–Lincoln. Items adapted from Parker, 1998; Snyder, et al.,., 1996; Wagnild & Young, 1993; Scheier & Carver, 1985.Note: R indicates reverse scoring. These 24 items were used in conducting reliability and validity analyses of the PCQ. If the PCQ is used for research purposes, and if it is adapted or altered in any way, permission must be obtained from the authors by writing to gli@unl.edu.

Appendix F: Definitions of Resilience

Author	Year	Definition Used	Adapt /Bounce Back to achieve Equilibrium	Adapt /Bounce Back to achieve growth	Adapt and Growth separate processes
Bonnano	2005	Resilience and recovery are discrete and empirically separable outcome trajectories following a dramatic event such as the death of a spouse. In contrast, resilience is characterized by relatively mild and short-lived disruptions and a stable trajectory of healthy functioning across time.			✓
Carver	1998	Carver distinguished between resilience and thriving, defining the former as a homeostatic return to earlier levels of functioning. Thriving, however, is more than recovery of homeostatic maintenance—it is being better off after the traumatic experience. The "person who experiences thriving comes to function at a continuing higher level than was the case before adverse event"			✓
Caza et al.,	2012	Resilience at work as a developmental trajectory characterized by demonstrated competence in the face of, and professional growth after, experiences of adversity in the workplace. E			✓
Cicchetti	1997	Resilience has been conceptualized as the individual's capacity for adapting successfully and functioning competently despite experiencing chronic stress or adversity, or following exposure to prolonged or severe trauma (Cicchetti& Garmezy, 1993; Luthar, 1993; Masten, Best, & Garmezy, 1990; Rutter, 1987).	✓		
Compas	2006	The ability to sustain adaptive functioning and positive growth and development in the face of significant stress and adversity.		✓	
Egeland et al.,	1993	Resilience has been described as the capacity for successful adaptation, positive functioning, or competence (Garmezy, 1993; Masten, Best, & Garmezy, 1990)	✓		

Garcia-Dia et al.,	2013	The theoretical definition of resilience is one's ability to bounce back or recover from adversity. It is a dynamic process that can be influenced by the environment, external factors, and/or the individual and the outcome.	✓		
Garmezy,	1991	Resilience provides metaphorically the dictionary definition of the properties in the emergent area of research: the tendency to “rebound or recoil”, “to spring back”, “the power of recovery”. "the capacity for recovery and maintained adaptive behavior that may follow initial retreat or incapacity upon initiating a stressful event"	✓		
Gordon	1995	“Resilience is the ability to thrive, mature and increase in competence in the face of adverse circumstances… To thrive, mature and increase competence a person must draw upon all of his or her resources: biological, psychological and environmental”		✓	
Glantz	2002	Resilience defined as “the process of, capacity for or outcome of successful adaptation despite challenging or threatening circumstances “ (Masten, Best and Garmezy, 1990 pp 426)	✓		
Luthans	2002	in simple, but accurate terms, resiliency is the psychological capacity to rebound, to 'bounce back' from adversity, uncertainty, conflict, failure or even positive change, progress and increased responsibility” (pp702).		✓	
Luthar et al.,	2000	Resilience refers to a dynamic process encompassing positive adaptation within the context of significant adversity	✓		
Masten & Wright	2010	“Human resilience refers to the processes or patterns of positive adaptation and development in the context of significant threats to an individual’s life or function.”	✓		
Masten	2001	Resilience appears to be a common phenomenon that results in most cases from the operation of basic human adaptational systems. (pp227)	✓		

		Resilience refers to a class of phenomena characterised by good outcomes in spite of serious threats to adaptation or development pp228).			
Masten Best & Garmezy	1990	Resilience refers to the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances. Psychological resilience is concerned with behavioral adaptation, usually defined in terms of internal states of well-being or effective functioning in the environment or both.	✓		
McCubbin	2001/ 2000	Resilience has been broadly defined as the ability to bounce back or to overcome adversity. / a dynamic developmental process requiring exposure to risk or adversity.	✓		
McEwan,	2016	achieving a positive outcome in the face of adversity,	✓		
Meredith at al	2011	Psychological resilience refers to the process of coping with or overcoming exposure to adversity or stress.	✓		
Naswall et al.,	2015	Employee capability, facilitated and supported by the organisation, to utilize resources to continually adapt and flourish at work, even if/when faced with challenging circumstances.”		✓	
Rutter	2006	resilience can be defined as reduced vulnerability to environmental risk experiences, the overcoming of a stress or adversity, or a relatively good outcome despite risk experiences For Rutter (1987), resilience describes "the positive pole of individual differences in people's response to stress and adversity" (p. 316).	✓		
Tusaie & Dyer	2004	a combination of abilities and characteristics that interact dynamically to allow an individual to bounce back, cope successfully, and function above the norm in spite of significant stress or adversity Dynamic process that results in adaptation in the context of significant adversity	✓		

Wagnild & Young	1993	a personality characteristic that moderates the negative effects of stress and promotes adaptation: individuals who, in the face of overwhelming adversity, are able to adapt and restore equilibrium to their lives and avoid the potentially deleterious effects of stress	✓		
Zautra, Hall & Murray	2008	Recovery that is swift and thorough, and sustainability of purpose in the face of adversity.	✓		

Appendix G: Role of Attentional Control in Anxiety- A Summary of Studies

Authors, Date	Summary	Comments
Cisler. & Koster (2010)	1. Facilitated Attention (Attention drawn to threat) 2. Difficulty in Disengaging (Threat captures attention thereby impairs switching attention away) 3. Attention Avoidance Emotional regulation strategy that directs attention away from threat.	
Beck, Emery & Greenberg (1985)	1. Automatic Threat Registration (Orientation model) 2. Primal threat mode (Automatic and strategic schema processing. Also stimulus appraisal) 3. Secondary Elaboration (Effortful reappraisal of stimulus, context and personal resources)	Anxiety is due to poor effortful processesing. Verbal mediation interventions promote more "constructive cognitive modes"
Williams et al., 1988/97	1. Affective decision mechanism (automatic assessment of threat) 2. Resource Allocation mechanisms (determines attentional focus – towards vs away) 3. Task Related Effort (override of AB by focusing more on a task)	But as valence of threat stimulis increases, less likey to be able to focus on task.
Ohman, 1993/4	1. Stimulus Analysis: (automatic, subconscious) a. Feature detector – biologically fear relevant stimuli (spiders etc) b. Significance evaluator – influenced by expectancy system (memories/experiences). Also activated by arousal system. Expectancy + Arousal = conscious perception system	Work on Automatic detection processes have been influential.
Wells & Matthews (1994)	Self Regulatory Executive Function (S-REF) Three levels of processing: 1. Low level automatic processing 2. Controlled processing (conscious appraisal and attention control)(S-REF) 3. Beliefs which guide controlled processes (e.g. negative/dysfunctional)	

Authors, Date	Summary	Comments
Eysenck (1997)	Four sources of information contribute to anxiety: 1. External Stimuli 2. Physiological activity 3. Behaviour action tendencies 4. Cognitions (e.g.worries)	Anxiety differences are a result of attention and interpretation biases which are guided by schema.
Mogg & Bradley (1998)	Anxiety vulnerability is not from direction of AB but from bias in automatic threat evaluation. 1.Valence evaluation system (automatically evaluates value of threat) 2. Goal Engagement System (in the absence of threat focuses on goal relevant stimuli 3. Vigilance-Avoidance (a controlled attention strategy to reduce discomfort or danger). Note this may also result in maintenance of attention on negative information in depression (Bradley, Mogg & Lee, 1997).	model proposes that attention is automatically directed to stimuli that are evaluated as having high subjective threat salience for the individual, and it differs from Williams et al.,.'s (1997) model in predicting that both high and low anxious individuals show greater attention to highly salient threat than mild threat stimuli
Derryberry & Rothebert 1997 / Lonigan, Vasey, Phillip and Hazen, 2004	Effortful control is a trait which depends on attention and inhibitory control processes that support effortful regulation of emotional and motivational functions but allowing individuals to allocate attention flexibility, decrease attention to negative cues and increase attention to positive cues. BUT conditions have to be right to allow and enable attentional control	
Matthews & MacKintosh, 1998	High level threats will impact both high and low anxious individuals. Anxiety can sometimes be suppress AB by task-related effort. Task and threat stimuli are competing for processing resources, The ability, particularly under stress etc to refocus efforts onto task will reduce threat Symptoms of anxiety may be due to failure to suppress AB	Like Williams model.
Fox et al., 2001	Visual Orienting: 1. Shift 2. Engagement	Note, some reseach has shown the opposite – anxious people avoided

Authors, Date	Summary	Comments
	3. Disengagement (anxiety associated with increased attentional dwelling on threats)	threat rather than dwelling on it (Yiend et al., 2015).
Eysenck, Derakshan, Santos, & Calvo, 2007	Attentional Control Theory: Anxiety increases attention to threat and impairs attentional control Core Executive Functions: (Miyake et al., 2000) 1. Inhibition 2. Shifting (task switching) 3. Updating But Anxiety strengthens stimulus driven attention system which reacts to threat Impairs goal directional attentional system which controls inhibition and switching. Suggest poor attentional control makes it difficult to disengage from task irrelevant threats. Also may result in working memory storing ask-irrelevant information (Stout, Shackman, & Larson, 2013; Stout, Shackman, Johnson, & Larson, 2015)	
Bar-Haim et al., 2007	Anxiety is a result of impairement oin one or more of the following: 1. Preattentive threat evaluation (may overestimate threat value) 2. Initial Resource Allocation system (may be oversensitive and therefore interrupts ongoing activity to alert of a threat 3. Guided Threat Evaluation System (analyses stimulus, experience, coping resources) 4. Override mechanism (system that reappraises threat as a low threat)	
Cilser & Koster, 2010)	1. Facilitated Attention (Attention drawn to threat - orienting) 2. Difficulty in Engaging (depending on how the threat has captured the stimulus and extent to which switching has been impaired) 3. Attention Avoidance (emotional regulation strategy)	

Appendix H: Psychological Dimensions Questionnaire

May, D. R., Gilson, R. L., & Harter, L. M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational and Organizational Psychology, 77*, 11-37.

Meaningfulness Dimension

Scale: 1. Strongly Disagree / 2 Disagree / 3. Neutral / 4. Agree / 5. Strongly Agree

Using the scale shown, please answer the following questions:

- My job "fits" with how I see myself
- I like the identity the job gives me
- The work I do on this job helps me satisfy who I am
- My job "fits" with how I see myself in the future

Using the scale shown, please answer the following questions:

- The work I do on this job is very important to me
- My job activities are personally meaningful to me
- The work on this job is worthwhile
- My job activities are significant to me
- The work on this job is meaningful to me.
- I feel that the work I do on this job is valuable

Psychological Safety Dimension

Supervisor Relations

Using the scale shown, please answer the following questions:

- The supervisors at work encourage me to develop new skills
- I am formally kept informed about how employees think and feel about things by my supervisors
- Employees are encouraged by supervisors to participate in important decisions
- I receive praise for good work from those who supervise me
- Supervisors encourage employees to speak up when they disagree with a decision
- Employees are treated fairly by supervisors
- The leaders here does what he/she they says they he/she will do

Co-Worker Relations:

Using the scale shown, please answer the following questions:

- My interactions with my co-workers are rewarding
- My co-workers value my input
- My co-workers listen to what I have to say
- My co-workers really know who I am

- I believe that my co-workers appreciate who I am
- I sense a real connection with my co-workers
- My co-workers and I have mutual respect for one another
- I feel a kinship with my co-workers
- I feel worthwhile when I am around my co-workers
- I trust my co-workers

Norms

Using the scale shown, please answer the following questions:

- I go along with the norms in my group of co-workers
- I don't rock the boat with my co-workers
- I do what is expected of me by my co-workers

Supervisor Support

Using the scale shown, please answer the following questions:

- My supervisor(s) help me solve work related problems
- My superior(s) is/are committed to protecting my interests
- I trust those who supervise me

PS (Being Self)

Using the scale shown, please answer the following questions:

- I am not afraid to be myself at work
- {reverse} I am afraid to express my opinions at work
- {reverse} There is a threatening environment at work

Availability Dimension

Outside support

Using the scale shown, please answer the following questions:

- I feel work allows me the time to invest in outside interests and activities such as sports, hobbies, family activities, religious or spiritual pursuits.
- I feel I have someone outside of work to talk to if I need to

Self-Consciousness

Using the scale shown, please answer the following questions:

- I worry about how others perceive me at work
- I am afraid my failings will be noticed by others
- {reverse} I don't worry about being judged by others at work

Availability (Cognitive Resources)

Using the scale shown, please answer the following questions:

- I am confident in my ability to handle competing demands at work

- I am confident in my ability to deal with problems that come up at work
- I am confident in my ability to think clearly at work
- I am confident in my ability to display the appropriate emotions at work
- I am confident I can handle the physical demands at work

Resources (Emotional Resources)

Using the scale shown, please answer the following questions:

- I feel mentally sharp at the end of the day
- {reverse} I can't think straight at the end of my work day
- {reverse} I feel overwhelmed by things going on at work
- I feel emotionally healthy at the end of the day
- {reverse} I feel like I am at the "end of my rope" emotionally
- {reverse} I feel emotionally drained from work
- {reverse} I feel tired before my work day is over
- {reverse} I feel physically used up at the end of the day

Appendix I: Email to Company Employees (Focus Group)

Working as we do for a fast moving technology company, you will no doubt agree that things are constantly changing – and fast. Known as the "VUCA" environment, meaning Volatile, Uncertain, Complex and Ambiguous, organisations such as ours are increasingly having to move quickly into new and unchartered territories as technology and markets change.

This being a relatively modern day phenomenon, there has been little research into understanding how working in such an environment impacts employee's mental health and wellbeing.

We have an opportunity to contribute to the latest research into how this fast moving, ever changing environment impacts our psychological health and wellbeing by actually being part of the research.

In collaboration with the University of Reading, we are running two focus group sessions here at Pannell House for which we are looking for volunteers.

The sessions will be approximately 2 hours, run over lunchtimes (lunch will be provided), during which PhD student Sam Mather will be asking you to share your thoughts and discuss what resources you feel you need to feel psychologically safe at work.

The focus groups have been approved by the Reading Research Ethics committee and as such all information provided will be confidential and coded therefore maintaining anonymity.

Please feel free to volunteer to attend a lunchtime focus group. To do so, simply click on the link below to enrol via doodle and select the session you wish to attend:

Event	Date	Time	Location	Enrol
Focus Group 1 – Non Managers	Tuesday 21st of November	12.00-14.00	Boardroom	Click here
Focus Group 2 - Managers	Thursday 23rd November	12.00-14.00	Boardroom	

If you have any questions, contact ourselves or Sam at s.a.mather@pgr.reading.ac.uk.

Appendix J: Poster and Online Flyer for Focus Groups

How is working in the VUCA environment working for you?

Never before have employees had to deal with such Volatile, Uncertain Complex and Ambiguous (VUCA) environments. As such, many current organisational theories and models no longer apply to this world! Perhaps it's time to update them…

Help support the latest research into the impact of this on employees by attending a **focus group** sponsored by The University of Reading.

University of Reading

School of Psychology and Clinical Language Sciences and Henley Business School

What will be you asked to do?

It's easy and painless!

- Attend a focus group of 4 - 10 people for up to 2 hours (12 - 2pm in the boardroom)
- Share your thoughts on the topic and take part in a facilitated discussion
- Answer a few quick questionnaires
- Eat: lunch is provided.

Who can take part?

Anyone! As long as you are working at Semafone, you can take part!

The data gathered from this research will be combined with advances in neuroscience to inform further research into how organisations can help individuals stay resilient.

Who will see my contributions?

No-one. This research is confidential. All responses will be coded using a participant id. No names will be revealed.

When?

Focus Group 1 – Non Managers	Focus Group 2 -Managers
Tuesday 21st of November	Thursday 23rd November

Click here to take part!

The University of Reading Ethics Committee has given this study a favourable opinion for conduct.

Appendix K: Session Plan for Focus Group

Materials Required:

- Consent form
- Debrief form
- Questionnaires
- Laptop
- Projector
- Supporting ppt slides
- 2 x A4 sheets of paper per participant, labelled with participant reference
- Flip chart pens per participant
- Flipchart stand with pad
- Refreshments
- Audio recorders x 2

Content	Purpose	Method	Time (run time)
a) Pre-Introduction			
Provision of questionnaires (before any communication)	• To gather information as to what PS mechanisms participants perceive as being present in the workplace	• Questionnaire	10min
b) Introduction			
Introduction to the study and its importance: • Confidentiality • Process of anonymizing • Agenda and timings • What is PS	• Introduce facilitator • Introduce study • To provide context, rationale and gain buy in.	• PPT slides	10min (10 min)
c) Discussion			
QU 1: Generally, how psychologically safe do you feel working here? • On a scale of 1 – 10, Ten being completely safe, 1 being not at all – actually unsafe (show scale on a ppt)	• To gauge level of PS • To start with an interactive exercise	• Provide individuals with a pen and A4 paper. They need to write down a score, Hold up paper together. • Facilitator summarizes results verbally for the tape recorder	5 mins (15mins)

Content	Purpose	Method	Time (run time)
		• Facilitator gathers in papers	
QU 2 : You all scored at least X *(assuming at least one person scored 1 and above),* **so there are somethings happening that help make you feel safe…what are they?**	• Identify what is currently being perceived as creating PS • Whether they are org, team, mgr or individually instigated.	• Write on flip.	15 mins (30 mins)
QU 3 : What would you need to see/have in place to make this a 10?	• To identity the elements that people feel that they need to feel safe?	• Write answers down on flip charts	15 mins (45mins)
QU 4 : What do you think stops these things being implemented/ happening?	To identity the elements which the group feels are out of their control i.e.: • Impacted by external influence • A product of the VUCA environment • Unlikely to change - to gain a view as to whether the element is achievable given the nature of the organization.	• Write answers down on flip charts next to answers from previous question	15 mins (60 mins)
QU 5; Where do you think the responsibility for PS lies in terms of % • Organization • Manager • Team • Self	• See where the perceived responsibility lies • Whether there is a perceived role of the individual and how much?	• Hand out a paper with a circle on it. Ask them to divide I up into four pieces like a pie, labeling each section as a percentage for each • Ask them to hold it up. • Collect in the papers.	5 mins (1hr 5 min)
QU.6 – So looking at the elements on the flips from Qu's 2 and 3, where do you see the responsibility for this element lying?	• To understand the extent of joint ownership of the elements	• Go back to the flips – place letter next to the identified elements to indicate who is responsible for it: ○ O = Organization ○ M = Manager ○ T = Team ○ S = Self	10 min (1hr 15 min)

Content	Purpose	Method	Time (run time)
QU. 7 (*Assuming that the Self was identified for at least ONE of the elements*) **Where you mentioned the self being responsible, what does that "self" (person) need to be/do to help create PS?**	• To understand the perceived characteristics of the individual	• Discussion.	20 mins (1hr 35 min)
d) Close			
Close and Debrief Thanks participants Provide debrief as to the purpose of the group, the importance of the information gathered.	• Allow opportunity for any questions • Thank participants • Provide further contact details		15 min (1hr 50min)

Appendix L: Consent Form for Focus Group Participants

Consent Form

To be signed by all attendees of the focus groups.

I, …… agree to participate in the study, Psychological Research in Knowledge Organisations, being conducted by Patricia Riddell and Samantha Mather at The University of Reading. I have seen and read a copy of the Participants Information Sheet and have been given the opportunity to ask questions about the study and these have been answered to my satisfaction. I understand that all personal information will remain confidential to the Investigator and arrangements for the storage and eventual disposal of any identifiable material have been made clear to me. I understand that participation in this study is voluntary and that I can withdraw at any time without having to give an explanation.

I am happy to proceed with my participation.

Signature ----------

Name (in capitals) ----------

Date ----------

Appendix M: – Focus Group Demographic Questionnaire

The purpose of this questionnaire is to enable us to identify the groups of people who are taking part in the study and identify any trends or commonality. You do not have to answer all the questions if you are not comfortable to do so.

1. With what gender do you identify?

MALE ☐

FEMALE ☐

2. In which age group do you fall?

18-24 ☐

25-39 ☐

40 -53 ☐

54-68 ☐

68+ ☐

Prefer not to say ☐

3. With which race to you identify:

White ☐

Black ☐

Asian ☐

Arabic ☐

Other ☐

Prefer not to say ☐

4. What is your marital status?

Single ☐

Living with partner ☐

Married ☐

Separated/ Divorced ☐

Widowed ☐

Prefer not to say ☐

5. Are you a parent to children living in your household?

YES ☐

NO ☐

Prefer not to say ☐

6. Length of tenure with this organisation?

< 1 year ☐

1-3 years ☐

3- 6 years ☐

6-9 years ☐

9-15 years ☐

15+ years ☐

Prefer not to say ☐

7. Organisational Level

Individual Contributor ☐

Team Leader ☐

Manager ☐

Director ☐

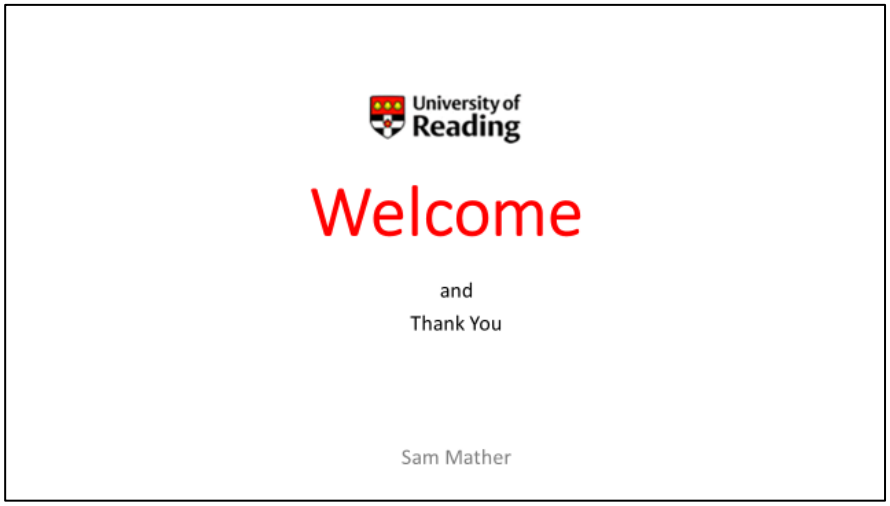
VP ☐

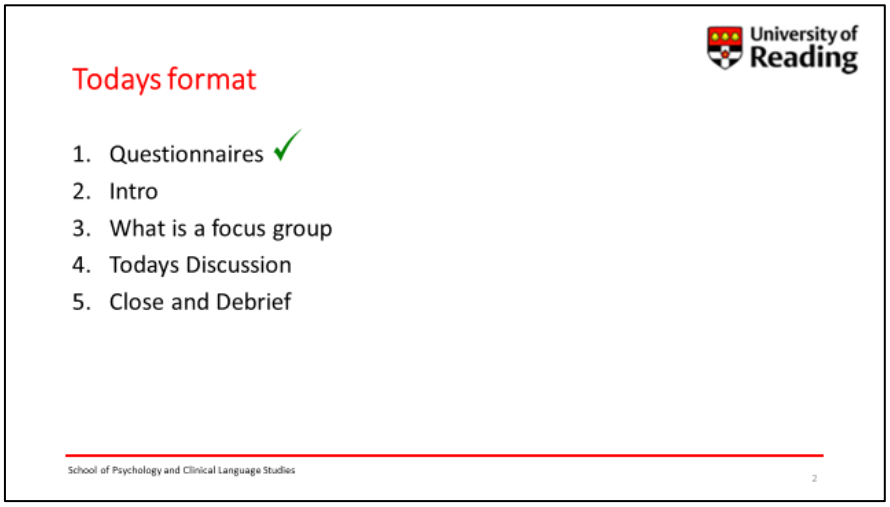
CxO ☐

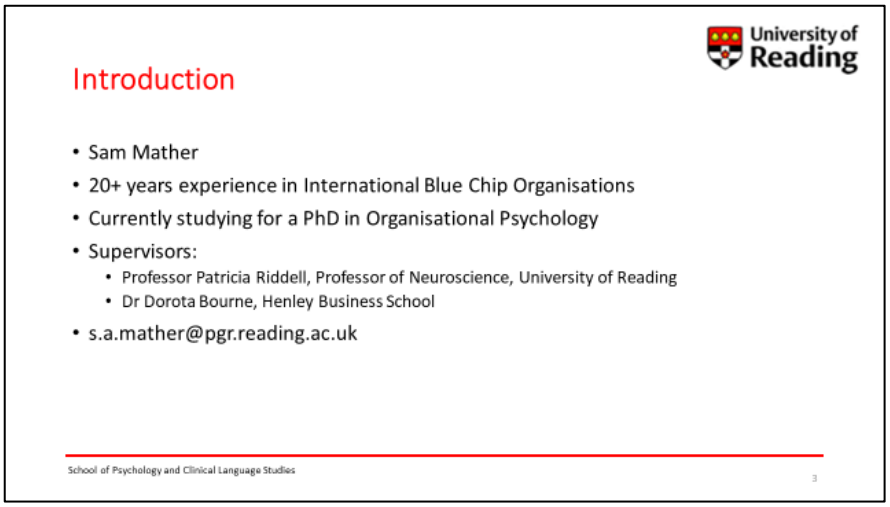
8. Your Job Title:

_____

Appendix N: Focus Group Opening Presentation







What is a Focus Group?

- Krueger (1988) has argued that focus groups are created with the specific goal of collecting data.
- The goal is not to reach consensus, make decisions, or provide recommendations.
- Focus groups are a data collection procedure
- Responses will be anonymised
- Recorded for coding purposes

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Topic – Psychological Safety

- [*Willing and]* "able to show and employ one's self without fear of negative consequences of self-image, status or career" (Kahn 1990).
- "The degree to which people view the environment as conducive to interpersonally risky behaviours like speaking up or asking for help" (Edmondson, Higgins, Singer and Weiner 2016)
- "Psychological safety refers to the extent to which team members feel they can take interpersonal risks and speak their minds without being rejected or punished" (Edmondson, 1999).
- "Allows employees to feel safe at work in order to grow, learn, contribute and perform effectively in a rapidly changing world" (Edmondson and Lei 2014)

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Todays Discussion

Given the volatile, uncertain, complex and ambiguous (VUCA) environment in which we are all working, how Psychologically Safe do you feel and why?

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Appendix O: Focus Group Debrief Letter

Thank you for your attendance at the research focus group today. I hope you found the discussion interesting and engaging.

The purpose of this focus group was to help inform further research on how organisations can increase employee psychological safety, which has been shown to improve individual's performance and engagement. Past research was carried out on teams in stable organisations with traditional structures. We are revisiting the research to look at whether traditional means of creating Psychological Safety can still be relied upon in the context of fast moving knowledge based organisations operating in VUCA environments and the extent that the individuals personal resources plays in contributing to Psychological Safety.

The model that the discussion and questionnaire was based upon was that of Kahn's Psychological Dimensions for engagement. Should you wish to read more about Kahns work, there are three seminal papers:

- "Psychological conditions of personal engagement and disengagement at work" –Kahn 1990
- "Psychological Safety and Learning Behavior in Work Teams" - Edmondson, A. (1999).
- "The Psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work" - May, Gilson and Harter 2004.

The process now is that the recordings from all focus groups across all organisations researched, will be transcribed and any reference to names or people will be removed and replaced with initials or job title. The recording will then be destroyed. The outputs from the focus groups will be summarised and analysed to identify the findings and the direction of future research. From this a report will be produced.

If you wish to have a copy of the report and/or would be willing to participate in any further research, please do contact me on s.a.mather@pgr.reading.ac.uk
Once again, thank you for your valuable time, I really do appreciate it.

Regards

Sam Mather

School of Psychology and CLS

Harry Pitt Building (Earley Gate)

University of Reading

Reading RG6 6AL

Appendix P: Focus Group Transcriptions

Focus Group 1 – Non Managers

Key:

P# = Participant number
F = Facilitator
PS =Psychological Safety

FOCUS GROUP NON MANAGER TRANSCRIPT

21st November 2017

Participants: 5

		min
F	Ok, just a little erm.. bit of an introduction about me, I am Sam Mather,erm.. I have for the last twenty-something years I have been erm working in blue chip organisations primarily technology, erm… across the world, and erm… last year I decided to err… fulfil a lifelong ambition and study a PhD at the university of Reading. Umm….. I am based in the Psychology department but I also have a supervisor who is based in Henley Business School because I am looking at Psychology in the context of organisations. I am not looking to become a clinical psychologist, and nor am I ok, so I won't be asking you to tell me about your childhood. I won't be going that route. You'll have my contact details if there is anything that you want to follow up with.	0.00
F	So as I said you will be known as participants erm…. 1 to whatever, so umm errr,, I am handing out err …a little participant pack that we will be going through cos the first thing I would like you to do, is complete, there are two questionnaires in there – a demographic questionnaire and a work questionnaire. I just want you to take a few minutes before we start the discussion to complete those questionnaires.	1.03
P?	*Question asked about handouts*	4.27
F	Yeah, it's just the two sheets, we will be using this one for something else in a moment	4.34
P2	This one?	
F	And there should be a demographic questionnaire as well	5.39
P2	Oh yeah.	
F	So its one work and one democratic, err …democratic…demonGRAPHIC questionnaire, and that's just 2 sides of A4 and that's it. The rest we'll be playing with now.	
P2	There's no option in between yes and no	5.53
F	Yeah, deliberately so, yeah. Most of the time. Most of the time.	5.58
P2	Can we leave it	

F	You can leave it, yeah. You don't have to complete or do anything. If you can't decide you can leave it.	6.14
F	OK. Well thank you for completing that, they are, emm..and I did them deliberately before we start talking about this so there was no influence or bias. So the discussion today erm.. is going to be erm….in the format of a focus group. Now the purpose of a focus group is really just about collecting data, it's not about it's not about coming to consensus, it's not about to make any decisions and it doesn't matter if you guys disagree with each other, it doesn't matter, it's just collecting data, different datas. As I said before, all your responses will be anonymised and coded so you can say what you like. I will be putting some stuff on the flip..on the whiteboard, I'll be photographing it for my purposes and then I'll be getting rid of it…covering my tracks.	6.23
	So the discussion today is around a topic called Psychological Safety. OK, so what do I mean by PS? Well its defined erm… by Kahn erm… who first came up with this as being willing and able to show your true self and, and speak out without fear of any negative consequences to your, to yourself, to your image, to your status or your career. That's how it's defined as. Do you feel you can be yourself? Do you feel that you can say what's on your mind without any fear of repercussion? It's also how you view the environment. Do you feel that the environment is conducive to, to saying something which might be contrary to whats been.. what the discussion is. How comfortable do you feel that environment is? And it's how, the extent to which you can take interpersonal risks, emotional risks really. With talking to your colleagues and the people around you without any negative repercussions. So that's the definition of PS. Errmm and up until now, most of the research has been done within the context of a team. What I'm looking at is very much around what does it mean for an individual because teams are kind of a loose concept these days.	7.12
F	Edmondson picked it up much later to look at errmm how safe you feel to low and grun….low and grun……grow and learn errm and errm within this crazy rapid, rapidly changing world. Any questions about what, the definitions on PS?	8.43
F	So..todays discussion, so given this VUCA, you've heard term VUCA, Volatile, Uncertain, Complex and Ambiguous, it's a US military term that's been adopted by organisations to describe the craziness that is going on particularly in the technology industry. Things are changing, technology is moving very quickly and as a result, we have to change and we have to flex. The question is, how PS do you feel?	9.10
F	So what I would like you to do, there are some felt-tip pens around the room I'd like you to write a number on this, in this square box to say how	9.39

	Psychological safe do you feel in the environment in which you are working. Is it a 1, is it a 2, is it a 6 is it a 7. If you could write it on that sheet of paper for me. And there's pens there.	
P2	Can you go back to the definition?	
F	Yes of course. I have gone back…there we go….theres a lag.	10.02
P4	My feeling is that safety, in my world, that number can change depending on what's happening and …..	10.16
F	Uh huh	
P4	…what you are doing. If you are with…	
F	Uh huh	
P4	…a new client and there's high expectations, then that safety won't be there if its something you have done before, and you've got some exposure to and experience that safety is going to be higher	
F	Yeah	
P3	The other interesting thing is of course is that there is a very significant variation on safety depending on the relations between individuals so it might be for instance that very characteristically you might have, you might have terribly bad psychological relations in your team but very good ones with your manager, or visa versa or it might be that you feel psychologically safe around most of your team members except this one member who you don't trust as far as you can throw him,	10.38
F	Yeah, yeah. Absolutely and you're, you're exactly right. Those are the things, it it is a fluid, it is a fluid erm concept. So let me build on that then before you write your numbers down. Let me build on that and say then what is it that determines whether you feel psychologically safe? Or whether you don't. What are the elements, if it is, if it is situational, what are the elements in that situation that make you feel safe or slash unsafe?	11.05
	silence	11.36
F	It might be easier to say what would make you feel unsafe, look at it that way.	12.00
P3	Umm obvious ones are power dynamics…it, you, know, could be that, you know, is what I am going to say gonna be a career limiting move.	12.07
F	But why would it be a career limiting move, in the sense of what, what is it about the manager that would make you think this might impact my career?	
P3	Ummm…..the degree of ….. combination of degree of effectiveness, to what degree they are authoritarian, i.e.to what degree they want to control the way something goes…	12.23
F	Uh huh	
P3	… theres the degree to which they tolerate disagreement and That can make a difference. Umm other aspects are the degree of sensitivity, if I am going to say what I am going to say, how, would, would it be perceived as insensitive, erm would it be perceived as ummm…as inappropriate or umm potentially offensive	

	to the person I am saying it to. That you are making a value judgement about them is what you are saying.	
F	Uh huh. In their view?	13.00
P3	Yes	
F	Ok, so it's very much, what, what I am hearing you say is whether you feel safe or not is very much dependant on the person that you are talking to	13.01
P3	Yes	
F	OK, any other thoughts	
P4	I think that's…….I thinks that's an xxxxxxx…….personally one to one level. Ermm I am thinking more along the lines of being exposed to the clients. You know, your confidence in front of erm a blue chip client as opposed to a smaller client who you can baffle more that you can't with the bigger ones. That would, that would change your safety.	13.20
P3	Yes, that's true about clients….but I, I do find clients quite easy to deal with because of the fact that basically any any dealing with a client effectively requires you to adopt a particular persona anyway. Effectively there's a whole, you know, in a sense, because of the fact that you not representing yourself in front of a client, you are representing the company. Let's just say its relatively straightforward to adopt a company related persona which means that I am now representing <company name>. Of course there is possibly a certain psychological danger in that because you might feel erm that your erm that there is a certain conflict. For instance you would like to be able to tell a customer, no seriously you can't do this but the sales guys is telling them something completely different. And you're not sitting in a position where you don't want to be disagreeing in front of a customer but your probably gonna have to take them to the side afterwards and kind of clarify that what you have just proposed really is not going to work.	13.40
F	But is that persona not the same whether it's a large blue chip company or a smaller one?	
P3	No, of course not, you might be, depending on the relationship you have with the customer, you might need to adopt different personas. You might have a slightly friendlier less aggressive persona in some environments, and in other environments, you have to be very you know, if you have a customer who is renowned for the fact that they throw lawyers at everybody, just on first principles you tend to adopt one that is more formal, more restrained you try to avoid making too many direct statements of fact, that might be used err context, out of context at a future, err future stage, try to be woolly, try to be definite but only on things that you are actually certain of.	14.39
F	So, so when differentiating, to go back to your point, when differentiating between some clients that you feel safe with and some that don't, I am hearing risk is one element. What other…..	15.14
P4	You're definitely right. You gotta have a risk. You gotta be concerned that you may say something negative that wasn't intended to be negative or might be construed as negative. I think sometimes you may get exposed to a lot of technical people and therefore if you're not a technical person that might	15.26

	become a bit daunting or where do you engage with the technical people is it honest, is it OK to be honest and say that's, that maybe I don't understand. That's sort of thing is about safety.	
F	And how does, if I then extrapolate that then back to the workplace within (company name>,then, errm I mean you've raised a couple of things here around the person you need to be, the level of risk and your, your your capability, your technical ability, are they not elements that also would raise your level of PS in the workplace? And if not, why not?	
P4	I dunno…..yeah, I see that's the same. I suppose when you refer to client it could be outside client, could be an internal client …	16.28
F	True	
P4	… you know. So the same, you gonna identify the same risks at errm gains ….?? And I think you'll find it depends on where you work If you're working in xxxx and somebody in that group knows your capabilities, or whatever, when you take them out of that and expose them to somebody else within the organisation then there might be a little bit of uncertainty there.	16.35
F	So its almost, its not so…	
P4	You gotta gauge the situation, You gotta gauge the situation, I think gauge the situation and then you will have an idea of what your level of psychological safety level is for that, whether you withdraw or you step forward.	17.07
F	So what do you use to gauge that situation? What measures are you using in yourself saying, weighing it up whether it is a safe or not safe situation. What what sort of things do you use?	
P1	Intuitive judgement based on experience I think.	17.37
F	So there is a piece about experience	
P1	Yeah, you get the measure of people and that's, that's something that's learned over time. You see behaviours exhibited in the past and one behaviour, somebody who exhibits a behaviour one behaviour, tends to exhibit other behaviours so if you see one behaviour happening, you know can expect the other behaviours to happen at some point and that will inform your level of, I suppose trust in them to be a straight dealer.	17.42
F	OK, any other thoughts on that?	18.15
P5	I was going to say a bit of familiarity. So you know if you are familiar with the situation, you know, something you have been in before, it probably comes back to experience. And also a little bit like the mood of the day, you know, people you are dealing with, like, body language you know, people have different moods every day, you know, people have a bad day which will probably influence my psychological safety in terms of you know bringing up something tricky or…	18.17
F	So what about, what about where your erm team is perhaps remote. How do, I mean, how do you get familiarity, know what their mood is or whatever. I mean, how safe do you feel with your remote teams, with the guys in America or wherever it is that you work.	
F4	Tone of voice I suppose	19.09

F	Tone of voice	
P4	Hesitancy to speak, or rather speak too much, says the man who is talking a lot <laughter>	
F	That's fine….its fine	
P1	It takes longer with a remote team erm…	
P3	You don't get the feedback that your get from body language, facial expressions and so on and so forth. Even on video conference it's actually pretty limited and you don't, you know, you know just the way somebody moves into a room you can tell whether they're in a good mood, you know, or whether they are feeling stressed or whatever, whereas you don't get a lot of that, you don't get a lot of that cue when you are dealing remotely and even less so if you mainly communicate with them via email because it really depends on the ability, the ability to communicate with email depends on on how good the other person is at writing or how good they are at expressing themselves. And err…Even IM wouldn't give you…it's much more informal, so dependent on structure you don't necessarily get a feel for how they're reacting, so in a sense you are dealing with a much blanker, blinder environment…… Sorry Tom I interrupted you…..	19.28
P1	No, no no, I agree. When I have worked for remote teams it's been much, much more emotionally distant with those people –erm it's a very dry, cold professional interaction as obviously I've never met them before so then there's more caution, err you don't, it takes time and presence to build that rapport that allows you to feel safer and therefore more unguarded.	20.21
F	OK, so one of, one of the key requirements for PS then is almost a familiar and personal connection.	20.52
P3	Yes having the personal familiarity or having the personal relationship whatever, whatever form with that individual, knowing them individually, knowing things about them, erm and having regular experience of what they are like is really really important for most people, I think for most people, psychological safety because otherwise your effectively…… the people you are working who is a stranger and you can't necessarily predict their reactions in every circumstance.	21.07
F	No, no, its about, so that's an interesting point as well, it's about predicting their reactions. Umm…the unpredictable…don't let me put words in your mouth but therefore the unpredictable equals possible "unsafe"	21.34
P3	Well, yes, err there's a, there's an element….It depends on the nature you know, you know someone who' a bit of a artistic maverick or whatever, they might have unpredicatable reactions but they tend to be in a certain category or about a certain thing, whereas what you are worried about really more is personal volatility you know, you don't know what to expect, you don't know for instance is this person going to be helpful would they, would they prefer not to be helpful, ummm yeah. Are they, are they deliberately going to make things difficult because you are asking them to do something ummm you know the classic, I think, you know, in terms of unpredicatablity, one of the things umm you know, you know in terms of often there could be cultural boundaries….	21.55

F	Yeah	
P3	The classic example in my experience.many years ago I worked with an outsourced team in Russia ermm they were very good, they were excellent engineers but they were used to a typical Russian culture were basically they were you know, as long as you did what the boss said, everything was fine and it took me a while to get them used to the idea that I actually wanted them to do things independently and tell me about it and I wouldn't judge them if I thought the decision was wrong but anyone else could correct it and it took quite a while to get the level of trust. Initially they would just do exactly as I said and I eventuallyl I had to explain to them that sometimes I am perfectly open to interpretation and always doing exactly what the boss said is not necessarily the right approach here.	22.38
F	So I am hearing trust coming through, errrm but there are different levels of trust. So, umm, there's the trust which is " I trust my manager is going to do the best for me and, and the, the there doesn't necessarily need to be a personalbility or a likeability, you don't need to go for a beer with them. Or do you need that emotional trust, that emotional connection, or can you do it at professional level? Do you see what I mean, there are two different levels there's one "he's my boss, and that's his role and that's what I do I and trust him to do that" or is it more of a heart thing?	23.21
P3	Umm its not necessarily…for me it's not a heart thing. One of the worst bosses I ever had was somebody I was actually quite good friends with umm…that was actually very challenging because essentially the friendship came into conflict with the relationship, with the professional relationship, erm and err the other situation that I can think of in that respect is that's its often, obviously if you have no personal relationship with that person erm it can be more difficult but erm its, its actually more about demonstrated behaviours a lot of the time than about the degree of emotional connection, of course if you don't have a great deal of emotional connection with that person, it might not be a big problem provided their behaviours have been consistently fair or professional towards you…	24.11
F	Uu huh,. Uh huh	25.00
P3	… but if for instance, the reason that there, if you can tell that the reason they are adopting this professional behaviour towards you is because they actually really really don't like you, and don't wanna…. they are being professional because they have to be professional, eventually, obviously xxxxxxxxx most people can get clued in eventually as to whether somebody really dislikes them or not and it's you know, that will be quite off putting, if you have somebody that, you know, is very very professional but at the same time you can tell if theres a manifest dislike or no relationship at all ummmm but at the same time it's probably sufficient in some cases provided you don't have a significant negative impression for them to treat you professionally in some ways that's easier than if you have a very close and heartfelt relationship certainly from a work perspective. I heard of businesses where everyone turns up and they are all friends but when that goes wrong, it tends to go wrong much worse than if you have a professional relationship in the first place and you are reasonably friendly otherwise.	

P4	<unintelligible> You don't have to be friends with someone to respect them	25.54
F	No	
P4	Just have to trust them	
F	You don't actually have to like them to respect actually …as long as you respect what they do	
P3	As long… the situations with a friendship can get in the way of a professional decision, lets face it, it really depends on the situation…	
F	OK, Any other thoughts on this from any other…..	
P1	We've talked about trust we've not particularly expanded on what that trust means..and … and for me it seems that the more you show of yourself the more knowledge you give somebody else of yourself, and you've got the old xxxx about knowledge being power, trust is about what they then do with that power.Whether its used against you, that, that would be a negative in related to trust. If it was used to your benefit that would foster trust, even if its used neutrally, so some of the things you say might be discarded for your own good almost – intemperate things you might say to somebody you trust, that person has earned trust because they won't repeat those intemperate things, they won't use them against you, they will just file those things as " oh its just that person being that person" so it. It, it I think for me, part of it is how they use the knowledge they gained about you.	26.31
F	Yeah, because there is a piece about being willing to share yourself	27.30
P1	Yeah	
F	OK. What about able? Able to show and employ yourself. What do you need to be able to do that? Is that the same, is that different?	
P3	Well you need to have some sort of idea of what you want to show, in some ways, you know. Some people aren't terribly sure, you know, terribly sure of who they want to be and they find it very difficult to do that. Otherwise, some people aren't very extroverted, some people have difficulties with interpersonal communications they don't find it easy to, you know, independently of who the, who the person is that they are with, there is definitely an ability on how emotionally alert somebody is, how good they are at reading other people's body language, gestures, faces ummm there is a lot of the things, the able is also again, the ability for instance, of remote teams, there is a big ability thing, you can't really show how….my classic reaction was you know, some people simply don't have that mechanism for reading, ummm aren't terribly good at reading umm emotional engagement out of your voice. And it's really quite interesting, I remember getting, I remember I was really really annoyed, really annoyed about something, a colleague of mine asked me if I was stressed and I responded to him rather intemperately along the lines of "AM I STRESSED??" sort of kind of along those lines and for whatever reason he just didn't pick up on it you know, I was being too flat toned or something, but it was just funny. At the time I was quite upset with him because of course I was stressed, but ummm in retrospect it was funny because it was a completely neutral reaction to something that should have obviously kind of triggered a	27.58

	"ping!" you know….Dirk is obviously on the warpath today, I'll leave him alone. Ermmm…. But it was one of those classic examples of don't assume people can read your tone, or read you know, read anything you don't make explicit. And its of course even worse with remote people if you're trying to talk on the telephone, you lose a lot of emotional register that goes and that means if it is very very hard to read. Also people tend to adopt a telephone voice a particular voice or particular turn of phrase that they use in that sort of environment, and you can't necessarily read what the emotional content that has. Certainly that sort of thing, the modus effects the ability, and also you know, peoples personal development and conditions, you know it might be easier to communicate ability, it can be cultural difference, cultural differences in different groups, differences in shared experience, shared experiences are really really important, but if you don't know very much about the kind of experiences the other person has had or you can't really relate to any of them, then its quite difficult to communicate with them because you can't necessarily, you can't identify the emotions that are related to that experience, especially if the experiences are more unusual or more out of line.	
F	Uh huh	30.49
P3	The classic example of that is again, sort of I guess I call best or worst managers, some of, like some of the best managers I have had are ex MOD, some of the worst managers I have had are also ex MOD –so it seems to me that army training, I get this really weird impression that the army seems to partition people into two groups where one of them was that they are actually very good people managers and the other group was absolutely abysmal, you did't seem to get anything in between and I don't know whe ther that is a universal experience or whether that's something that army training produced that effectively the people who were the ex-army people who are useless obviously rely very heavily, rely very heavily only on line authority to get things done and relied on the competence of juniors to make sure they do do things	
P4	Yeah, it depends on the skills of the person really cos from my experience, like I say, people with military experience, some have been fantastic and some have been poor. The fantastic ones are the ones who can adapt and change very quickly in the environment.	31.34
F	Right	
P4	The ones who simply can follow the rules, can simply follow rules and possibly shouldn't be in that position to….	
P3	Yeah	
F	So how do they, I mean the adapting and changing is kinda critical in this environment to be able to turn around, adapt and change…	32.00
P4	Yeah	
F	.. so what do they need to give you, these good managers, what do they need to give you, to make you willing to adapt and change without feeling unsafe, nervous, scared, threatened etc etc	

P4	I think it goes back to what Dirk was saying about colleagues in Russia, I think if you micro-manage people you are not gonna get anything from them. if you are encouraging, have the participation conversations or with a view of what they are doing without negative…..you've gotta do reviews, you know you got to look at the negatives and the positives in order to get better at something but it can't be negative feedback its got to be a critique of something. This was good, this wasn't good that needs improving. Everybody wants a constructive, if you just say to somebody "that doesn't work" there is only so far you can kick somebody up the backside before they stop taking it. And that, that behaviour, I think is micro-managing and that's probably the worst, certainly in this industry it's changing, we need people to think. We want them thinking all the time.	32.21
F	Now, you're, you're right about we need people to think, we need to be able to, to get the most out of people in this innovative and, and driven environment. Errm, I mean how easy is it to do that if you are feeling unsafe?	33.12
P4	Yeah, very hard I would have thought	
P2	You can do whatever you want to get things done……its working	
F	Yeah, so that individuals should do it that way.	
P4	Yes, umm I think it's also probably to do with erm I suppose its also to do with to what degree you are dependent on the , on the err esteem of your managers, your peers because if you are an incredible self-confident person, that can kind of go two ways, on one side it can mean ermm that you are just gonna do what you are gonna do and errm if it goes well you will probably get a great deal of praise and people will be impressed with you and err but the disadvantages of course that if you are very very self-confident but don't actually have a great deal of ability to back it up, you can be an extraordinary nuisance to everyone else because you basically don't make decisions on their behalf that are, that would make their life very very difficult. Ummm, and err, its an interesting one because of course an absence of self-esteem can have two consequences, one of them is inability to, you know inability to listen to criticism, because somebody you know, somebody with too much self-confidence might ignore criticism but somebody with too little might actually treat every possible criticism, you know professional criticism, might treat it as personal, tend to take any kind of criticism personally and be very very, you know, it might be very very difficult, you know, it might be very very difficult not to be very intrusive very round-about in suggesting how they should change something that they do because you might actually hurt their feelings more than you actually manager to correct what they are doing.	
F	Hmmmm hmmmm	35.15
P3	That's a classic one…yeah, um….	
F	Tom…?	
P1	On the trusting for me its a better manager being a person of their word. If they say they will do something, if they say a position is protected, holding to that. If they offered a defence if you like to hold to it.	35.21

	Ermm on the word able, you talk then about being different teams being able to read ermm your persona, but that's about them receiving transmitted information for me the word able is about the ability to transmit the information. How able are you to project yourself	
F	Uh huh	
P1	….and the word able there, well the opposite, inable implies paralysis, that the situation is very hostile for me to be inable, incapable of expressing your self, implies a very harsh paralysis, would be low the very low end of that scale, one, two….	
F	Yeah	
P1	…..ummm, to be to be able to be yourself implies that is not so oppressive that you can exhibit your own characteristics, you might not necessarily feel safe in doing so, you just don't feel so completely cowed by the situation that you withdraw totally.	
F	Ya. I mean I think this is, so all this is err, I think this is great stuff and you are absolutely right, I think there's…… my question would be, if we looked at these sorts of things, the ones above there, whose responsibility is it to provide safety through these things? (*whisper…can I just have a different coloured pen please, thanks*) Whose responsibility for example about to, about the management style, and about the risk, and the trust and the familiar…famil..famili….this one, and EQ, the emotional…I mean whos responsibility is it…the organisation, is it the team , is it your manager, is it you…who's responsible for that?	36.32
P2	Collective responsibility ….	37.25
F	Bit of everything….	
P1	But it cascades	
P5	Culture…..suppliers as well….	
P3	There's two elements. There's the one, the interpersonal one you know. If you work with a bunch of people who know to be untrustworthy, it's obviously never going to you know, its going to be very difficult, but for instance there may be very different relations within a team than outside of that team. You also get a lot of team competitions in some companies where, you know, organisation x is really, errr I used to work many years ago, many years ago I used to work for Nortel and I used to say that Nortel, the greatest problem I ever perceived with Nortel was that you were far too busy actually fighting off the internal competition for products that you didn't really have any time to react to what the customer wants.	37.29
F	Yeah, yeah I've heard that before, I mean I've come from an organisation exactly like that….	
P3	Its not completely accurate, it was an exaggeration, but there were definitely elements of that…	

F	..but you felt like that….	
P3	It was umm you know, and sometimes you kind of see this kind of silo-ing, where xxxx here but this, this err, This lack of trust within different….you might trust everybody within your organisation, within your part of the organisation, but those guys over there, that's a shifty bunch of bastards. What are you going to do…	
P4	Can I just say, does Psychological Safety change with the size of the organisation and the maturity of the organisation? As a smaller organisation where there are less people we're interacting with one another on a daily basis…..as the organisation gets bigger, you are going through different transitions, you are going find different problems. When you get to the big conglomerates, then, then there's gonna be infighting you know, somebody's been promoted ahead, for whatever reason, you're gonna have that, you're gonna have that competition. It's very easy to say well it needs to come from the top down, traditionally systems are all hierarchical where you, you, the decision comes from the top and you push it down…..	38.37
P3	Yeah but that kind of conflict in a larger organisation little else than top down	
P4	It's trying to push it down the system, it's very difficult to get an idea and then force it back the other way. In development environments, seeing things differently where there is a flat line structure where you have these technical heads and they may not be involved in writing the code but they very much understand what needs to be done and therefore there is an open environment to discuss	
F	And that's why I am really interested in technological environments, because as technology moves on, it used to be the old way where the managers were the boss and they knew more because they had been here longer and they knew everything and you'd go to the manager and the manager would tell you what to do. Doesn't work like that anymore. Now a manager manages people who are, who are, you know, propeller heads, they know all these things, more than they do and its about collaborating and bringing them together	39.50
P4	Cos we are getting more and more information and being given more and more information and there is stuff available whether it be online …xxx, xxx,xxx you are constantly being reminded of something all the time so you are trying to keep abreast, and that's quite difficult even for an organisation that's quite well structured, for the top to be abreast of everything xxxxx make decisions ??????????????????????	40.14
F	Yeah	
P1	In terms of a culture that can engender PS. I do think it flows down. it's possible for a middle manager to set their own agenda and run their own department…I have experienced that when I worked for another company….we had a fantastic director of our division who variably set his own management style, his own culture and it was quite different from the rest of the company's and I think it was only possible because he was very very strong and so he was able, well two things, one he was very very strong, very very able to fight for that freedom but also because he produced results at the end of the day. If he had not been successful he would not have had the latitude to get his own way.	40.38

	Without that massive energy it wouldn't have been possible to…….and he didn't succeed in forcing the change upwards. He only succeeded in running his division the way he wanted it run.	
F	So what I am hearing is a lot about, in terms of willing and able, a lot of this is extrinsic to you as an employee, this is all stuff around you, this is all stuff that happens to you or around you or whatever, etc. If we wanted to take control of our PS, irrespective of all this that goes on cos you get power and politics in every organisation, you get difficult clients wherever you go and you are going to get people with different experience and different trust etc - is there anything you as an individual can do to maintain your PS while all this maelstrom is going on? I mean you mention self esteem and confidence, is there anything else that you would like, or have that would make you *able* to had PS?	41.35
P1	Adopting a persona, when you go and speak to a customer you adopt the <company name>'s persona so you distance the person you are there from the person you are yourself, that comes at a cost	42.31
F	It does	
P1	It's a great way of putting up a defence for that meeting or indeed for all customer interactions but I think what you do by doing you invest your own personality in the company so now your own ….	
P3	… your self-esteem, your esteem your, your, self-respect an so and so forth becomes intrinsically to the value of the company.so if the company isn't doing well you feel bad about yourself because you think you might be contributing.	
P1	That and also if the company values deviate from yours ….	43.15
F	definitely	
P1	…. then part of you is being denigrated. So, that person, persona comes at a cost.	
F	Yeah, it takes effort and energy to be a persona that is very much different from who you naturally like to be. And what this is saying is its about being yourself	43.30
P4	But some of that is down to the culture of the business and the power and experience. If you haven't strated to implement that sort of culture…cos if you imagine if you didn't have, you PS was low, you really have to change the culture of the business for it to increase, Cos it isn't a case of switching something on an it happens, it takes time and it takes participation to change the culture.	43.41
F	So, I agree, I think culture, definitely errm its huge! I mean that's, how do you feel at work, is the culture encouraging you to be yourself, I absolutely agree..	44.12
P4	I think it does in this company	
F	Yeah, great! And that's good to hear. If you were in an organisation whereby that was less the case, are you going to change it, well like you said its going to take a long long time, so what can individuals, ***can*** individuals do anything to equip themselves, to feel safe ***irrespective*** of what's going on around.	

P1	They can't make themselves feel safe, the only thing they can do is arm themselves against the consequences of not being safe. Greater psychological robustness.	44.52
P3	Also, it's effectively how safe do you feel in the rest of your life. If for instance you have lots of hobbies, lots of friends errm very engaged in other aspects of your life,. The amount, if you feel very PS in the rest of your life, then the chances are that you know, if work turns out, work isn't that great, you may not feel entirely safe at work it doesn't matter though, you know, if worst comes to worst I can change jobs, I can do something else, if you have a degree of self-confidence you have a long term social social….	45.07
P4	…external sources, better balance, works hard and you have a better balance	45.45
P3	Also the armouring aspect. It's also a question of personal security you know. If you, you know, You'll probably feel a lot more willing to be yourself if you know you have a years salary in the bank and could, you know could, you know you take some time off or you have alternatives available you know. If you regularly….the more people feel that they are backed financially or organisationally into a corner, the classic one being people been with the company for 20 years, nearing retirement now, don't want to rock the boat because …… that makes a very big difference….	45.56
P4	Do you think they've become institutionalised	46.34
P3	Yeah, they do…there is an element of that, institutionalisation if you have been with the same organisation, it's certainly something that's visible	
F	But does that not make them feel safe – institutionalisation?	46.45
P3	No, no, often it doesn't	
P1	I challenge that, you mentioned large companies as well, so in small companies I think there is more scope for xxxxx personalities, in a large company tends towards optimisation, because xxxx mass market appeal which tends to be grander, so I would have thought a long serving staffer 20, 30 years I would have thought that if they have survived that long they would have become institutionalised and aligned to the prevailing group think whether it was them 30 years ago or not is a different question, but I think they probably, if they have been there that long, they have gotten used to it.	46.51
F	So they have developed some sort of psychological robustness to deal with the peaks and troughs	
P4	Some sort of defence mechanisms xxxx but I agree with Tom. If you put someone in a job that's institutionalised, and you asked them to change jobs, they couldn't do it, and they couldn't do it because of the safety net that they've got in their role	
P3	In a lot of org, these people are often, once they have adapted themselves to the org, they are often quite successful, they often have a lot of tenacity, a lot of staying power. But if there are significant sudden changes they are often the people who just you know, they are the people who are least able to cope, just because their particular psychological armoury has basically made sure…. 48.26hasn't made them very flexible. They have put on so much armour they are not flexible they can barely move.	47.58

P1	Yeah….you ask if that's psychological robustness, I'm not sure it is. I think its evolution. I think they have actually changed. So, for me Psychological robustness is the ability to withstand things which are not to your mental liking. I think these people have actually changed so that now is to their liking its now an environment where, if not thrive, they, they succeed, survive. Maybe it's come at some personal cost in terms of losing part of who they are, for me its slightly different to being robust.	48.25
F	So when it comes to evolving and flexibility you said, being flexible, or being able to evolve, what do you think they have that makes them able to do that? Cos like you say when you take somebody out of institutionalised environment, they are the ones, that you know, if you think about it, I mean, I don't know, I've come from a huge organisation where people have been there for 20 years and sudden life is changing like that <fingers clicking> and their level of flexibility, they are very insecure, so what do we need to give those people to say, you know what, you've survived this long, what do we need to pull out of them, or given them or help them to say let's get you flexible, let's get you evolving. What do you think stops them doing it?	49.01
P3	Because a lot of the time they feel its, they feel that this is an imposition. That basically once they got comfortable in one position, because of the fact that it feels like its outside of their own control, the locus of control is somewhere else in other words I am being told to do this, not I think this is a good idea, you know, I am being told to do but I agree it is a good idea.	49.48
P4	I would say actually, I would say some organisations, I personally don't like to be micro-managed and when I manage people I don't like to micro-manage them but some people actually like that, some people actually want to be told what to do every step of the way….	50.14
F	Yep, they do	
P4	…. And erm so if they get any responsibility for decision making no matter how minimum that is, and some people ??????……some of these questions I don't know how they would be posed against contractors who come in and out of the business who see cultural changes all the time.	
F	So, OK, well that's a good point, so contractors, you ask them, although they don't, they are really not part of this infrastructure, they usually feel quite psychologically safe do they not.	50.48
P3	Yes, because they have no long term gig? They know they are doing the 6 months or 3 months or 6 months at a time, ok I've got two weeks' notice but they are not somebody who is expecting, there is no expectation, they expect to be there for 6 months and then be gone. And they also have the expectation that whenever they roll away they are looking for the next contract or next role. So effectively they are psychologically prepared for this change, they know that anywhere in the next 3 – 6 months there is going to be a completely different job And the other reason, they feel relatively safe is that obviously if they are going contracting, they've obviously made the decision that they can financially	

	afford not to work for x number of weeks, or x number of months they have a degree, they must have a degree of financial security they understand that they get paid better on the proviso that its not guaranteed. And the other thing is they don't have the emotional engagement, they know that if they work for, if they are in an organisation that they find toxic or difficult, they know they only need to be there for 6 months they don't have to make any kind of long term commitment to an organisation.	
F	But neither does an employee – they could resign. Cos what I am hearing is two things. So I am hearing that if you are an employee you need that emotional engagement and connection to feel safe, but if you are a contractor, you don't. It's the lack of emotional connection that makes you feel safe. So how does that work?	52.13
P4	I think If you look at the experience of contractors, contractors tend to have a lot of experience in their own ability and that will compensate for some of the other. They realise the difference ….With a contractor you expect them to hit the ground running, You possibly don't expect that from an employee. A contractor in my opinion you would expect to come in and hit the ground running	
P3	Contractor isn't expected to get trained, they are expected to get familiar with certain processes but they usually come in cos they already know something. Confidence comes from the fact that you can't really be a successful contractor and be incompetent at whatever you are hired to do. You get the revalidation because somebody else pays you to do the same job to fix some specific thing or to use your skills.	52.52
	So, if…..go on…..	
P1	Personality type; a contractor is a self-reliant person much more than a person who chooses to be a permanent employee. So the permanent employee makes the emotional investment as part of the way they like to structure their life. The contractor chooses not to make the emotional investment, or benefits from not having the emotional investment as part of who they are.	53.21
F	Interesting thing you raised about, they hit the ground running, they have confidence in their ability, capability all of those things, so if an employee had all those things, plus the emotional engagement, would that not make them feel incredibly safe, like the safest of safe….	
P4	Yeah, I suppose it would…	54.10
F	OK, let's put it another way. If they had all that, what would need to be in place for them still to feel unsafe…so they are good at their job, they are emotionally engaged but they still feel unsafe? Why, what would it be?	54.12
P4	It would be a threat from somewhere….	54.25
P3	External threats, either in their personal life or something about the culture of the organisation.	
P4	It would have to be the culture. And the reason I would say that is because if its your personal life, you would be coming to work to get away from it.	
P3	Yeah, that's true	

P4	Whereas if you are at work, it could be the person above you, the person beside you. But if there is something that makes you unhappy, it doesn't matter how engaged you are, you can have all the experience in the world.	
F	But they can still …so its not just about emotional engagement, its not just about being really good at your job, there is definitely something that's the organisation responsibility around culture. Do you consider yourself in a large organisation or a small organisation.	
P1	Medium	
	Laughter…..	
P3	Yeah, medium I think when Tom and you joined he would have called it a small organisation	
P1	I still would! 100 people to me is small, 1000 is medium and 10 000 is large	
P5	It depends if you have worked for an organisation that had 3 employees	
F	Yeah, yeah – it's relative!	
P4	If you look at the numbers there is also a level of how the business has adapted itself and changed over the short period of time its more a medium sized business. I said to somebody the other day, its got a different mentality you know as the business grows, to some extent it's a small organisation but the way the products work it's medium so you have this cross over happening within the business. Most organisations of this size that I have seen would struggle to have this level of engagement.	
F	It is, it's a critical point in a organisation when you go from being small to medium, medium to large, these are big..cos theres a point when you are a small organisation where you need to fish or cut bait where you either need to stay small and boutique or we have to grow and there will be change that's associated with that. So you mentioned you think there is still a good level of engagement, so what did they do during that transition that change that enabled people to still stay safe and engaged, compared with say other companies that you might have worked with? What did they do differently, or what did they do well?	
P2	Delegate	57.17
F	So they delegate from ….	
P2	Yeah	
F	And what sort of things did they delegate during the change?	
P2	Management	
F	Uh huh. And what does that allow you to feel….when you have been delegated to how does that feel??	
P3	Really gives you a sense of trust, because they're saying hey, I've given you a target, I've given you some deliverables, now I'll let you go away and do it.	57.44
F	Yeah, so its back to your micro-management type of thing	

P3	In the same way – its one of the things I have noticed actually, specifically within TE teams its happened a couple of times. We know perfectly well that when we hire people they are not going to be productive on day one because they don't know the product, they don't know anything so basically we say "tell us what you think you can do" and we let them go and do some useful work until such time that they are familiar enough with the product. But on occasions, especially I am thinking here with Usman here, OK, you go away and do your xxxx thing and it turned out to be really useful. We tried that on a number of occasions and it tended to work.Of course when it didn't work it tended to make a bit of a mess but those people aren't there anymore.	57.55
F	Well that's quite interesting cos they have done something a little bit risky, it didn't pay off and now those people have gone. So what is the view around risk? You know, if you tried something new and different and it went wrong, what's the consequences?	58.41
P1	I think it depends on why it went wrong as well	59.00
P1	I think the person you are thinking of there, if we are thinking of the same person they didn't leave cos what they did went wrong	59.07
F	Oh right OK	59.13
P3	No, the two things are not related - in a sense it wasn't a problem that they went wrong, but they had, what you describe I think we are probably talking about the same person.	59.15
P1	So the technical solution wasn't great, but that wasn't, wasn't great it could have been improved and built upon, the problem was the, was errm their ability to take management and be directed to improve upon it and to accept external input and a number of other interpersonal factors.	59.26
F	Ah, OK.	
P1	So in terms of trying and failing I think that's well tolerated if good efforts have been improved, are used and accepted input. What one of the criticism is we spend too much time talking and getting consensus but that's a protection….if something is tried and failed lots of others have had a chance to get their eyes on it and say yes to it so if its failes, it's a collective failure.	59.53
F	But is that not one of the parts of the armour that you are talking about in saying, I don't want to put my name to this new thing because if it goes wrong its going to be the sword of Damocles that comes down on me but if we all agree, I can go "well everyone else said yes" – you know is that not an armour?	1.00.26
P1	It could be, or it could be a humility	
F	It could be	
P3	It kind of depends on whether your saying look, you are trying to protect yourself as a consequence or maybe you genuinely think that your colleagues might have something to say…..they think that this is a good idea or a bad idea	1.00.45
	Or both	
P3	Or both. On one side you are seeking collective responsibility i.e. everyone contributed and agreed or at the same time you really did want the input	

P1	And that relates to what you said about ummm …that that no man can know everything, that no longer is the manager manager because they know everything, that's that's not the case, so its airing an idea in front of lots of people is, is about getting those different perspectives, it's a way of bringing together all that knowledge so that the, it's an informed decision thats made by somebody who doesn't' understand it	1.01.07
F	Yep	
P1	Sounds a bit dumb when put like that	
F	Yeah but its drawn from the specialists	
P1	Yeah… they have been well advised.	
F	Right.. Ok. So there is something about the ability to do new things without having negative consequence and the ability to work with your team and draw ideas and this sort of "collectiveness" as well.	1.01.43
P3	And there is also the element of trust towards your manager, if you know you are going to fail, you know, you say I don't think this is going to work and your manager actually believes you and says, yeah, we can do something else what do you suggest. Or hey, I don't think what we are doing is going to work can you, can you change this…you actually have enough of a relationship with the people you work *for* rather than work *with* to be able to be able to, to be able to, sort of, indicate to them that whatever we are doing here isn't working and that, that maybe we need to change it.	1.02.04
F	And what if the manager said, I hear what you are saying, but we are going to do it anyway and you don't believe it's gonna, gonna work. How does that feel?	1.02.32
P3	Really depends on, on one side your kind of… it really depends on, your own level you know if….some people find it very distressing, sometimes it like….some people have the ability to say, well fine, I have been told I ought to do that I'll go and do it and I'll work with the….the degree to which you feel threatened by that kind of situation is really how safe do you feel otherwise….you know, are you going to get blamed if it doesn't work. There's an element….	1.02.41
P4	Sometimes, sometimes you are up against the, if you are up against time sometimes if you are up against time, sometimes it's safer to say, we are going to have to do that, that's it…..	1.03.05
F	Yeah	
	We haven't got time to discuss it …..	
P3	…yeah, we're just gonna do this……	
P4	…….it'll take far too long, we need to do something. Sometimes doing nothing runs a risk, err I just think you know that there is that element …..And it is a business, it's going to change all the time and, and….with the best will in the world you know, we have requirements that should be met and so a so forth but I can guarantee that right up to the day we are releasing it we're still changing it.	1.03.20

P1	It also depends how certain you are if its going to fail I think …..if you see a risk then continuing with executive cover is fine, if you see a certainty that it's going to fail continuing regardless of the cover feels futile.	1.03.44
P4	Well, that again that comes with some experience as well, a, a, a newer person in the business wouldn't necessarily be able to gauge it that well because they haven't got the experience	1.03.59
P5	I think if someone gets knocked back again and again, xxxx then he will stop. He will feel demotivated and he will probably stop making suggestions, and it makes him feel unsafe I would say because he would then feel he can't talk, speak their mind, you know, bring ideas you know	1.04.11
F	Yes, exactly. So from a , there's still a massive onus on organisation and culture. There's a responsibility on the manager I am seeing in terms how they manage you, micro managing, whether they delegate to you, their own personality or erm moods, or whatever you want to call them ermmm and there is a piece here about the individual has a responsibility as well umm in terms of err, self-esteem, identity, robustness, , I love that, psychological robustness umm and umm more of a sort of holistic view around how are they feeling. What have I missed? What else….maybe a question might be. Is there anything that this organisation can make you feel more safe, and if so, what is it. What would you like to see?	1.04.34
	1.05.42 – 1.06.14 silence…..	
F	It's a good sign	1.06.15
P1	Either that or no-one feels safe enough to say what they'd like to see change!	
F	Either that or everyone is terrified	
	<laughter>	
F	Yeah, um	
P4	It's difficult, it's difficult…in, in the way businesses are today it's difficult to guarantee safety for anybody	1.06.29
F	Umm it is	
P4	It's very…. We had a quarterly review the other month that said how the business was doing. I suppose that level of engagement lets us as employees realise whether we are good, bad or indifferent, I suppose if they stopped doing them and then turned around and said, this is where we are, we are down here then you wouldn't feel so safe.	1.06.39
F	Yeah	
P3	I think, another isnt' really the reviews, actually having…..you, know, but actually you know, its it it's a very changing business but it's till useful to have a roadmap even if it keeps on changing….	1.07.03
F	Of course, of course, yeah	
P3	… the issue is that when you basically have..you tend to feel less safe if you don't see goals on a roadmap being accomplished …. You see amazing shiny	1.07.16

	sitting on the hill over there, actually we haven't built the road yet…but we might build it next month… Umm and I think that's a question of confidence, how confident you are feeling with the direction of the business…that that… I think sometimes you kind of want somebody who gives you gives you a very strong, you want somebody who gives you a very strong direction because that …you know…even if you don't necessarily believe every element of it….	
P4	.. if you disagree with that, with that roadmap, then how would that make you feel? If you said well actually the company needs to do *this*, but we're going here….you might think actually, the competitors are doing that but we're doing this….unless you can buy in to what you're doing is the best thing since sliced bread, you might feel unsafe	1.07.56
P3	I suppose it's a question of do you feel more safe in an environment where things could be changed quickly and easily… or do you feel safe in an environment where somebody has some grandiose vision….which you know forward onward Christian soldiers and we all go marching on towards it. Some people prefer the visionary environment where somebody has come up with this overall idea ummm but at the same time I am not sure that will make you feel very Psychological Safe in that environment if you don't agree with that vision…you know it's the classic if you hear stories about Balmer or Steve Jobs, if you, sort of… have this wonderful vision but it's not necessarily a good idea to disagree with any of them	1.08.19
F	Well no, Steve Jobs was renowned for that, yeah, yeah.	
P3	You know that kind of environment where somebody is very visionary or very clear on what their vision is, but they weren't necessarily very tolerant of dissenting ideas then obviously, you know, that could be a very difficult position	1.09.06
P1	But that gives you a clarity at least. Which if you're completely at odds with a clearly stated vision of the company, it, it makes it clear that you should have no emotional investment and at that point, the only….that should allow you to have… should make you feel safer, in the sense that you know you don't fit in so you know you need to be somewhere else and those external factors we talked about like employability…umm financial stability come into play and if those are in place then you can get another job ummm so you, you don't need to care about the fact that they are going the wrong way as you perceive it . I think when it's a smaller difference between the stated direction and your view of what the best direction is, then you've got sheer, sheer forces…and that's hard because you don't want to let go of what you think could be good "if only they changed this" and changed direction somewhat – that's probably harder than a complete, discrete view.	1.09.18
F	So it's like when you say there is a value thing as well there – do I see it going the right way, in the right manner etc. I suppose it's a trade-off like you were saying, between the hard view that says there's where we are going and well these the roadmap, it might change in six months – you know, it might change	1.10.22

	this way or that way you know so it's about ummm, and let's be honest you need that fluidity in this kind of environment and the question is how do people weather that quite frequent change. Does it, if having a clear view makes you feel safe and they go, well that's where are going and then six months later they say no, we are going over there, then it's like "well 6 months ago we were going over there, and now we're going here" – is that a good thing, is that a bad thing…you know….	
P1	It that the difference between details and principles, so if you have visionary principles which are stuck, adhered to, even if the direction flexes then that seems like a good thing	1.11.12
F	Yeah. Yeah	
P1	If it's, if the underlying goals that are forever shifting that's a good sign to get out	1.11.25
P3	And specifically when the shifting goals are really happening, mainly because the previous goal completely failed, that's usually a bad indication, you know, when the reason that shift is taking place isn't an adjustment because, you know different priorities now but where its obvious that what you are saying different priorities last time didn't work, lets try another one. Now it doesn't matter, iterating isn't a bad thing you know, any engineer knows that any 1.0 prototype is going to have some problems, it might not even work. The point is you do a proof of concept, the proof of concept works, it doesn't you know …1.0 can just be, you know it might be somewhat failure prone you know, there is nothing wrong with failing but if you get the impression that the business is basically lurching from one failure to the next that's very different from an iterative improvement process	1.11.32
F	Fair enough, yeah. And I, and I think you are right in saying in todays, today, you know, I don't think anyone can be guaranteed a job for life.	1.12.19
P4	No, you know, you talk about people being in a job for 20 years that's something of the past, things are changing all the time….	1.12.28
F	Unless you are in the government…or the university!	
P4	I think most peoples, most people's jobs change, there is too much instability, there's bigger competition that there was before, you are not getting…….???	1.12.41
F	And apparently there is a talent shortage, a talent shortage	
P4	Talent shortage?	
F	Yeah, apparently, a global talent shortage – worldwide talent shortage and apparently	
P4	It's very difficult to judge sometimes, it takes people, certainly in technology and I've thought about this as a business in the company, this is the first company I've worked for where you don't have a training department, how would you put a training department together? The requirements are different for every floor you go to and different segments within the floor. You can't have, you could have a research and development type things but that's different from training and. and but you still have to have a mechanism in place	1.13.05

	to bring people in with little experience and bring them up to the xx with a lot of experience.	
F	Yeah, yeah, umm	1.13.43
P4	Or bring someone in with a lot of experience who can add extra to whats already in place and share,	
F	And then keep them	
P4	The original <company> way was was, the swimming lesson by immersion…	1.13.54
F	Oh, yeah yeah…in you go….	
P4	….yeah, you know, if you managed to blow bubbles of the right colour we might actually fish you out if you are sinking. If not we wouldn't bother. There was very much in the early days there was definitely an element of that we did tend to select though, select for people who were self-starting and capable of picking things up as they went along but it also meant that you tended to get, umm, it wasn't, it meant that basically there was kind of a lack of internal consistency because you kind of picked it up and invented the job as they went along…	1.14.02
P4	And how much damage are we seeing in the business now….	
P3	We are certainly still dealing, we are only now dealing with the legacies from that period.	1.14.38
F	But there is an interesting point there, to use your swimming analogy, umm you threw them all in and the ones that sunk to the bottom and drowned disappeared, but the ones that had something in them who were able to cope with that environment, the managed, they learnt to swim, they somehow learnt to swim despite having none of the extrinsic training support that perhaps they should have had, what, and you just said the most self-reliant go, sort it out them-selves-type-of-people. Are they the sort of people who make their own Psychological safety? Are they the ones that make their own rubber ring and they can float?	1.14.45
	Ummm….From an engineering perspective, I think everyone prefers self-tapping engineers, as in yes training is useful but the important thing about training is that you have a consistent form of training the important thing is, I remember the first company I worked for, you know, I'd learned on the job and one of my colleagues said something very very important to me, it was just a single sentence, it was just about, the internal structure of the programs, don't, you know, this is not a programming language, it's a messaging engine – it was that kind of statement, it really was quite abstract, but because it explained the fundamentals of what was going on, we are always looking for individuals, certainly from an engineering perspective, who are capable of being, well not necessarily self-taught cos there is the old adage about if you are, you know, self-taught you've had a fool for a teacher type of thing but, ummm but the ability to absorb or develop knowledge, there's an element as an engineer, you really want somebody who is capable of performing experiments, say you have an API definition, set programming functions right, it would be nice if you could ask a colleague, what does this one do, the alternative is someone who is capable of formulating an experiment to see "if I put this slightly weird values in, whats going to happen, does it blow up, does it	1.15.25

	do what I expect it to, does it, how does it behave"? If I don't know how something works, is there something I can do to try and find out how it works and…...	
P4	You need somebody that, that xxxx evolves	
P3	Yeah…evolves…	
P4	Flexible really	
P3	Learning ability	
P1	Yeah, someone who is capable of synthesising new knowledge	
F	Yeah, I don't think that just applies to engineering though as well though, if you are in sales, or markeing or HR, if the environment in which you are working in is evolving then you may need to learn new things… laws are changing, customers are changing….	
P1	I think that's the talent shortage…the ability to synthesize new knowledge. To learn, to experiment, to discover things. You talked about the swimming pool methphor, in the early days the only people who could survive were the people who could figure out how to swim for themselves, as the company evolves, there is benefit in spending the time to "codify" swimming, umm because it means those who are, even though you still want those who are capable of learning to swim….ummm	1.17.28
F	You are running out of metaphor there aren't you	
	<laughter>	
P3	You want everybody to be able to do the crawl rather than	
F	Yes	
P1	That's right yes,	
F	…so you put a life guard to make sure and…	
P1	Absolutely because there will still be new types of water to swim in…	
F	Yeah, keep going, keep going with it…let's see how far we can go….	
P4	I was having a discussion today with xxx about some of the code – and we write code in different ways and what we have got to get into the habit of is, is revealing what they say is the best way of doing it is, so we're at the end, we are all finishing the swim if you like but some are faster than others and we have got to get them doing the best technique that we can and that, that's what I'm saying is how do we pass that knowledge across?	1.18.25
P3	And how do you do it without hurting somebody's ego by suggesting that their code is kind of rubbish anyway, you've got to be able to bring those ideas across, explaining why you have to be able to do that but you also need to allow people a certain degree of leeway so that you are not, hurt their feelings. Egoless programming is, obviously a wonderful thing except	1.18.54
F	The ego gets in the way of everything!	
P3	…but it doesn't work that way. Certainly….admittedly there is probably nothing worse that self-created prima donnas who all disagree with each as to what	

	they do, as to how to do things, at the same time, it's kind of helpful when you have got people who can listen to each other, learn from each other.	
F	See, you've got degrees there, you've got on one hand you want everyone swimming the crawl and on the other hand you are say you don't want to micro-manage people, you want them to do their own thing and be innovative etc. There a lack of….a dichotomy there in terms you want both.	1.19.41
P3	On one side you would like to do everything that is structured engineers like to do everything by the book but you would like to be able to change the book.	1.19.56
P1	You can have a plan but there will always be unexpected things that come in, I think you want people who can deal with those unexpected things artfully.	1.20.08
F	Good. It is coming up to quarter to the, two. Let me just check I have done everything that I need to do. Ermm, Yup, good. What do you think? How did you find the discussion?	1.20.17
P1	Very interesting	
P5	Intriguing	
F	Yeah. OK, thank you. It's been great. Really interesting observations. Yes, some of it aligns with what some of the research is saying, so what I have got for you guys is a debrief letter and in the debrief letter it tells you, if you are interested in what we have been talking about today, there is some, err, documents and articles you can have a read about it. So, yeah, some of the stuff you have talked about aligns, other stuff is new and coming up and I am hearing it in other technology organisations, so I am sensing that there is some trends coming along, umm. The process from now is I have got a few more of these focus groups to do both here at <company name> and also in other IT organisations, errm and then once I have done all those, I will be producing a report – with no names in, it will just be, these are the trends, this is what I am hearing, this is what aligns, this is what doesn't align, this is what I am now going, this is how it forms my hypothesis and of course you will , err, I will be sending that to Inga, and you will more than welcome to read it if you wish, or at least just look at the pictures, or just completely ignore it! Whatever you prefer to do. But I really do appreciate your time on this…..let me give you the debrief letter…. Here it is..so basically this is a summary of what we have done, what we have talked about and erm some interesting reading if you wanted to follow up. My, erm, I've given you my email address, I should have perhaps popped it on this letter, I will take the documents away with me and if you have any questions, or you'd like to follow up, feel free to drop me a line. I'm on linked in as well umm if you want to go that way. Thank you. 1.23.10	1.20.42

Focus Group 2 – Manager

FOCUS GROUP MANAGER TRANSCRIPT

23rd November 2017

Participants: 6

Key:

P# = Participant number
F = Facilitator
PS =Psychological Safety
??? = inaudible word

		Min
F	Semafone Focus group 2	
P1	You want us to do both forms?	0.08
F	Yes please	0.20
	Silence as questionnaires completed	
F	So, questionnaires, tick, we've done the first bit already. Errm I am going to do a little bit of an introduction, who I am, why I am doing this, what this is all about, err looking to a little bit about positioning what the purpose of this group is.... and then we will go into the discussion for today. So, errmm, as you know my name is Sam Mather, I've worked for over 20 years in blue chip organisations across the world primarily in the field of talent development, err, umm and leadership development. Errr As I mentioned earlier, I was made redundant a year ago err from an IT organisation and I decided to fulfil a lifelong ambition to do my PhD full time. So I am now a student, and urrmm this is, this is part of the beginning of my research journey here in terms of the focus groups. So, umm I am being err supervised by two faculties, so, Psychology and Neuroscience because I am looking at the brain and how the, how the environment impacts the brain but I am also doing it with a very business focus so I also have a supervisor from Henley, err, Henley Business school. So err I kind of straddle both camps, so I am surrounded by people doing clinical psychology, but actually I am not doing, doing any of that, I am focusing very much on organisations, and you will be given, feel free to contact me any time if you have any questions, about any of this and I am also on Linked-In. So the purpose of today is just about collecting data and thoughts. We don't have to come to a consensus, we don't even have to agree with each other, it's really just the start of the collection process and as I said all your responses will be anonymised and coded anyway - I have that joy of ten hours of coding for every 1 hour of conversation <laughter> so, errm I have all that to come, so please, please be as open as you like ummm and it will eventually go into a big pot with other IT companies that I am running focus groups with, and at the end of it, once I've got them all, I'm, I'll produce a report which will talk about trends and whats come out and you'll be more than welcome to have that, I will be sending that, sending that through to, through to Tim and Inga and it will be available for you. And don't worry, you won't see your name in there…	3.16

P?	Dam!	5.44
	<laughter>	
F	"Tim said"……	
P?	You want royalties?	5.49
F	So the topic I would like to talk about today is Psychological Safety. So, it's defined as being willing able to show your true self without any fear of negative consequences, whether those negative consequences are on you personally, o your identity, on your emotions or on your status and career. Kahn was the first guy who came up with the idea that there are some psychological dimensions to enable people to engage at work. Errmm emotionally, it's about interpersonal behaviours, do you feel, do you feel ever at risk or there are any threats like, and the key, the key, question people ask is do you feel you can speak up and say your mind. It's kind of like a litmus test – how do people feel about that. So for example if you work in the white house right now, that might not be as Psychologically safe an environment as it was perhaps previously. Now Edmondson, she umm, Edmondson umm was the lady who picked up and run with it in the late 1990's the challenge I have is she has focused very much on team, and how do you feel within a particular team, umm, but in this sort of….as organisations are changing from the 90's, we have many many teams, we are not just a member of one team and it's not as stable as it used to be in the old, "olden days" when I started out. So, this is why we are starting to look at it from an individual piece. And it's important because if people feel safe, their brain, their limbic system of their brain is not being stimulated, so therefore they can use the "clever part" of the brain, their pre-frontal cortex, which allows them to be innovative and creative. If you're too busy worrying about what's going on and your your limbic system has been activated, your putting your energy into protecting yourself as opposed to contributing positively to organisations. So this is why it's important, particularly for IT organisations, we need people to be smart, we need them to, to come up with clever ideas. So the discussion today is given this volatile, the VUCA environment, volatile, uncertain, complex and erm ambiguous. It's a military term, a US military term which has been adopted umm, how psychologically safe do you feel and why? So lets start with opening by asking you on a number from 1 – 10, 1 being feeling I am not going to say a word, 10 being, yeah I feel really comfortable, where would you be and why.	5.57
P5	It's this in our teams or in the organisation?	8.41
F	Good question. So, what I am interpreting by that question is that your PS differs, in depending on where you are….	
P5	Errrr…yes, yes, I suppose it does, yes.	8.53

F	Great, So then my question is, so what determines, when it's at one end or the other?	
P1	The num….Well, for me the number of people in the room would make a difference, or actually I guess the people that you are with.	9.10
F	OK	
P1	There are certain people that you probably feel	9.15
P2	…..thats it….	
P1	…. safer with cos you know them better or whatever….	
P2	….probably…its' gonna be ok, you can say pretty much whatever you need to say but if you are not sure of what the repercussions will be, you more reticent	
P1	…reserved	
P2	…to speak your mind	
F	OK…so…..	9.35
P1	It also depends on how much alcohol you've drunk as well	
	<laughter>	
F	Yes – there is an underlying assumption here that alcohol is not involved	
P1	Ah, ok…alright	
F	Any studies go out the window….	
P3		
	That's why the Christmas party would not do here….	
P3	?	
	So, putting alcholol to one side, what I am hearing you say is, its about ummm the people that are around you and h…..you said knowing their reactions…	
P2	Yeah, so there may be disproportionate reactions to what you say to people, or unintended consequences, outcomes whatever, so basically you have to measure that against, you know, it's a trade off. You can say what you want but its best to ensure that what you say is said in the right terms in a given environment	
P3	I think everybody assesses things on…	10.34
P2	..tactics…	
P3	…on whether the person that is receiving the message is… adult. And that's, that's, psychologically adult rather than you know, age adult. So if you feel that the person that you are speaking to or communicating with is going to receive your message, even if they don't like it, they are going to receive it in an adult fashion….	

P2	Yes	
P1		
P3	…the likelihood is you are going to have a more sensible conversation…	
P1	You're going to feel more comfortable with it	
	if you feel that person is not going to perform in an adult fashion and has some pre-disposition towards	
P1	Yeah, yes you start to think a bit more carefully about how they are going to react…	
P3	… I mean childish is possibly the wrong word if you have an immature reaction to a set of events then you are far more reticent to decide whether you're are going to, to communicate and quite often within the first 5 or 10 mins of meeting someone, that's what you're actually weighing up …decide whether to have that communication in the first place, so..Tims example of maybe talking to customers I am sure there is a reservation there before you even start isn't there….	11.17
P1	Yeah yeah	
P3	For you guys, its you know, in your in your very close knit teams its probably not so bad where you know your teams…..	11.48
P2	No…no…there's……	
P1	Its sort of the importance, the the, you. You're your're, are assessing the importance consequence of saying the wrong things or doing the wrong thing aren't you in that customer environment, it's like you don't want to mess up… you don't want to say the wrong this…oh god, I've missed that opportunity or they have gone off and and iI suppose is that what I care about what they think about me…a little bit…but its also that I care about the outcome, I want them to become a customer of <company name>, or you want, you want them to spend money with us, so there is an outcome that I am after ummm I, I, think you know, it would be crazy to think that is it not somehow associated with their potential judgement of me as a person, I mean, I ,I, you know would say that yes, there is always going to be an element of that to those interactions.	11.56
F	Uh huh	
P2	I think this varies widely, I've been in teams before this company where very carefully on what you say because the people, the slightest criticism could set them off….and this can go on for week, weeks…	12.43
F	So what do you mean by "set them off"	
P2	They will go, basically they will do this antagonism basically and they will go off and try to prove themselves to you, and particularly if they are a peer or over you in terms of the hierarchy, it can be difficult to manage.	13.00
P1	I mean that's a great….Frankies point about that, the immature reaction…	
P2	I've seen that…it can be quite dramatic.	

P4	It might change the position depending on where you are in that team job? ??? the team then you are much more confident than if you are actually in the team erm people *<inaudible>* actually what you two are saying makes more sense that you judge the audience.	13.24
P3	Yeah, I'm finding it hard to understand what I mean by adult, because its its not about whether somebody is you know…at a higher grade or a lower grade, it is their reaction to the information that, I mean if they attach emotion to that, sometimes that emotion is great cos its positive and ……somethings that emotion is detrimental because you either inadvertently threaten someone or their PS is in question and therefore it brings out you know scratch cat and box and you then have to work out how you are going to cope with that and I think everybody makes a judgement about that before they start a conversation and it doesn't matter, it certainly doesn't matter to me anyway if it happens at Tims level or one of my reports, you still judge everybody as if they were accountable on the idea of how they are going to urm emotionally react to the information or the statement and stuff that I've got to make..um so I think it is PS versus PS if you like. WE all have a pecking order for that and we all make judgements about it and decide how we are going to feel and how that informs our own PS.	13.45
P1	D'you know, I mean for there's always an element of the subject matter that's in the information or communication, how confident do I feel about it,	15.10
P3	By delivering bad news for example, that's quite often a situation where most of us would feel slightly Psychologically Unsafe ourselves or under confident cos it's never a nice thing to do and you never know how someone-else is going to react	15.18
P1	Yep I was thinking particularly in <company name>, well in any technology company technology is always an area where, some people will….well there is always a pecking order who knows most about, right, so I mean you know, if I was to come to George and sort of…if I was going to have a technical conversation with George I would naturally be, probably quite reserved in my opinion cos I would want…you know I know he knows more about it than me, so I would errrr….	15.36
P2	I think its natural, seriously in my team, I think most of the team know much more about it than I do…	15.50
P1	Yeah	
P2	They have had many more years that I have it's a thing. But in terms of the team, thinking about what Les said before, I think the team lead gives the, gives the err actual signals, right. if they speak, if the team lead speaks openly that gives, you know the right, perceived as given the right for team members to do the same, If they are very errr forcing heirachy, that gives them less of the option	
P3	I think what Tim is trying to bring out is that there are also dogmas associated with that, son if somebody has a particularly passionate view shall we say….	16.32
P1	Yes, yeah	
P3	…To be kind, umm then that can be considered a threat to someone who might not have quite that same way, so you end up in situations where you might "violently agree", run with the definition that its "violently" in its delivery	

P1	An' I, and I think you're your point about when you go in for a conversation, if you know, you know it's gonn, its with somebody, it is one of those people with those strong opinions, you naturally approach that conversation in a more sensitive careful way….	17.12
P3	Particularly in an IT environment or any technical team there is quite a lot of that because people have worked hard to get to the knowledge bases that they've got they have an opinion about how things should be done, you know, they do these things because…	17.28
P1	and you get these deep domain experts don't you, who really do know a subject super well	
P3	And that's important, its not money. Its not status. Its not anything else, you are actually attacking them as an individual.	17.51
P2	I agree, I think, I think, that in a sense there is a knack to managing people by the right conversations. If you want to get the message across you can't speak to the same people the same way, you might try a different approach	17.59
P6	You might ask their advise, mightn't you, try to make them feel important to begin with	17.15
P2	You might even try to propose it or try to get them to buy in to whatever it is you are proposing, so its, its, kind of a game,.	
P6	Well its like game of chess, isn't it really, it can be,	
P3	But the outcome of that is you are trying to make them feel PS in order to…	
P6	Yeah, in order to get the best out of that conversation.	
F	Chantal raised two issues about the team and you've talked a lot about interpersonal relationships between two people, but, you mentioned, do I feel safe in my organisation as well…you mentioned, so if we are talking about organisation as well, what is it about an organisation that makes an organisation feel safe to work for?	18.46
P2	There's an overall…..am looking for the right word, there is an overall look and feel to the organisation, which makes, you know, you you get it quite quickly when you join a company, I'm here just over a year and from day 1 I felt safe, in other companies not so much.	19.10
F	So what are the differences between those who do you or you don't what is the thing….	
P5	I think it's the culture cos I've been in companies whereby if you do something wrong they would fire you. They will do anything they could to find a scape goat. This company isn't like that. You make a mistake, we learn from it and that's the whole point of it. Errm it makes you feel like you *can* contribute and you are part of the organisation, so you feel more secure. More trust	19.33
F	Right, so it makes you feel…trust so there's atrust there and almost like an open attitude to failure.	19.58
P5	Yep	

F	For want of a better word….	
	<laughter>	
F	Theres no such things as failure, only feedback!! It's just feedback that's all….! Ok. So you are feeling safe there. Any other mechanisms that organisations can put in place to make people feel safe	
P3	Its almost like, because there's departments and teams, there's a ??? between departments and teams that varies depending on how a team is structured or the culture of the team which is slightly different to other teams, ??? objectives, whatever….	20.23
F	Yes	20.37
P3	So its like, its almost like when you approach one team, you speak in one way, in another team you speak slightly different way. I don't think its bad, I don't think its something that needs fixing but it's a fact that not all teams work in the same way.	
P3	Could some of that be due to that fact though that we are very dedicated to our, I know it's a horrible word, but our silos – you know, what our, our teams do and the intensity with which they do them and sometimes if those silos aren't quite aligned up with those same strategic goals in mind and they feel like they are pulling away from each other because their goals are slightly different you get……..	20.53
P5	If you go upstairs is really quiet, whereas I make a great effort to make sure people are talking to each other – it can be about anything, nothing to do with work cos you are at work 8 hours a day so	21.22
P1	There needs to be a bit, a bit of fun and actually if you went up to the sales team in London there is, there is, you know chat all the time….	21.34
P3	But that doesn't mean there is PS though is that just the preference…?	21.41
P1	It's just the type of, is it sort of the personality type, the type of individuals in a certain team….	21.46
P3	Developers think, that's what they do….	21.50
P2	Developers talk all the time, that's absolutely true, they can talk, well about the work anyway. Um but yeah, I, I,	21.52
P3	I don't see the fact that they are quiet as an issue that's associated with them feeling psychological safety	21.58
P5	No, <inaudible> ……..very different	
P1	Yes so somebody from the outside trying to have a conversation or to think about kind of communicating something that wall of, of silence can be, potentially be	22.05
P5	…quiet intimidating	22.15
P1	Yeah, potentially yeah	

P5	I mean you wouldn't go out an employ someone who……..	22.19
P1	Do you??? What?? HR!!	
	<laughter, lots of talking>	
P6	So if I need to get a message across……	22.28
	<lots of laughter>	
P6	..lets change the title……	
F	There is kind of a pre-requisite that you are physically safe to get onto being psychologically safety	
P4	I would say one of the things that on a smaller scale that makes you, or me feel more comfortable there is a bunch of meetings, we regularly get together, whether it's in front of another group, we have weekly meetings to assess about risk and If we weren't having those weekly meetings umm but we were having them remote, I think people would get pretty bored of them, they just switch off. So there is that, I get, just going to those, I get the feeling that we can, there's the time to talk, and there is plenty of meetings where we can talk so that, that makes me feel more comfortable umm, it's more, so it's more open	22.48
F	So how does that dynamic change, or does that dynamic change if your team, or the meeting that you are having is with people who are remote?	23.25
P1	I was going to say, you've hit on a great….we have sort of virtual relationships via email and instant messaging and things, and then we have real relationships were we have face to face and I have to say that they can, they can be binary actually in terms of the complete opposite in the way that you umm, you interact with somebody on, on in that virtual world than the real one	23.34
F	I mean we are globalising and your boss might be in a different country, or your teams or whatever, so, I mean, what do you need from them in order to feel PS. How does it impact it being remote?	23.55
P5	It becomes a very big switch to objective based relationship because they need to know, what, because they are left, I mean we have teams in Austin. I spend a lot of time, I have weekly chats with them to make sure they know we are still here but their sort of down days are based on objectives, its more, its more structured as such than here because here you know what people are doing, and over there you don't know what they are doing and there's a time difference ….	24.09
P2	In a previous company we had a team not based in the office, everyone their own house and we were probably at least as in contact as we are here in the office because we used Skype but we were in the same time zone so being a different time zone is actually a big switch….. I ended up in the other company with teams across the global with 24 hours difference, 12 hours difference and that is really difficult to manage.	24.43
F	Yep. And, I mean if you are in a team that is dispersed like that, what do you need to feel safe, over and above what we have already talked about….Is there anything different?	25.13

P2	Frequent contact I think for the remote members and that's definitively something we need to work on. But, yeah you can't apply the same principles for people who only have 2 hours, one and a half hours overlap in time zone to someone sitting next to you.	
P1	I am sure you guys would agree that if you've got, I mean we, you have to spend a lot more time reassuring the people who are remote…so anyone who is working remote you think…"oh gosh…of course they will have misunderstood that"….arrhg you know, so you spend way more time giving reassurance to the people who are remote whether its necessarily about trying to make them feel safe or not, but it is just about making sure they understand whats going on and they haven't misunderstood and they are not sitting there dwelling on something that happened a week ago, whereas actually somebodys, when you are face to face with somebody you can pick it up, see it straightaway, you can see it, oh that person looks a bit down, you can go and say "whats going on". Whereas you know, I mean I find that all the time, its amazing, if you, if you don't think about the boss in Austin or Phil down in Australia or whatever you can suddenly go a talk to them and three or four weeks go by and Christ you guys are miserable as hell, whats gone on, what's happened, cos you haven't just been reassuring them that they are doing right and everything's ok so…ummm… I've got no experience of being that remote person actually, I think most of us are kind of all… spend most of our time here	25.41
P2	Being a remote person is not easy, not easy because you don't have the same contact, so you don't have the same safety, you don't have the same support in many cases, you gotta be much more self- confident, much more self……what is the word……..	26.48
	????	
P2	Yeah, exactly, than someone in an office with other people, so it is very difficult, very difficult.	
F	And yet that is often the way we are going, in the way of remote teams and err so the mechanisms we have talked around, you know being able to walk up to someone and saying hi, and having the fun bit, and the cake in the kitchen and all sorts of stuff they don't have that, so that is a, if that's the way we are going, how do we make these people feel safe. And you are saying communication, communication….anything else?	27.17
P2	Communication is fine, I think it's the overlap that's really important in terms of…we have skype, we have so many ways, we have email, we have IM, we have so many ways of speaking to each other even on the road, I've had that for many years with people being on Skype 5, 6 hours a day with each other in view of everyone, next to each other but if you only have two hours or four hours with a person and you are in meetings or whatever, its, that's that's more delicate to manage.	
P3	There is a curiosity with that though cos, ermm, upstairs in development, people would much rather email than stand up and talk to each other so that's…..	28.20
P1	Again it comes back to that, there is a diff…there is a virtual relationship going on isn't there and a real one	28.30

P3	…to some extent they seem to feel safer	
P1	On IM	
P3	…..Than communicating in the way that is you know more social and there is something intellectually, you know or in the brain somewhere that makes them feel safer to just pop their little fact out, and that's their…. <inaudible>	
P1	Write it down, they are controlling the message, they've thought about it they've been able to….	
P3	Yep	
P2	Don't under estimate the fact that when you join a team, I don't know how often that happens today, when you join a team, you fall in line with whatever methods are…..	29.05
P1	Hmmm…you accept the norms that are there	29.16
P3	If someone wants to communicate verbally, but you fall in line…..	29.16
P3	This is, this isn't by any means peculiar to <*company name*>	29.19
P2	OK	
P3	Absolutely not.	
F	Let me just turn that on its head and challenge that for a moment. To what extent is the reason they write it down and email mail it because they may feel Psychologically unsafe and they may feel safer to write it down, maybe copy everyone, I don't know, to what ex…Is that indicative of a safe person, or an unsafe person?	29.27
P3	I, I couldn't say, I don't know, but I do notice that it's a trait in development and engineering institutions…	29.46
F	Yep	
P5	Errrrr.. I've had teams that are developers and haven't done that..	29.58
P3	There are, and I'm not, I'm not saying that doesn't happen but there are a lot that operate in that way	30.01
P2	Well that's what I was saying, I think, I think you're right but I also think its how, how the team…	30.08
P5	Absolutely…….	
P2	…kind of start communicating with each other, if they, if they, if they learn to make it by email and they join a team that communicates speaks by email, you are not going to sit up and stand up and start talking to the other..you're gonna do the same thing so it depends, I mean, errm yeah, ….a number of teams quite vocal quite fun, others are much more formal possibly too formal in some cases, everything works, documented but it depends on the company of the team a lot	30.13
P3	I don't disagree….	30.39

P6	Also based on the manager then as well	30.41
P1	Fair observation yeah	30.42
P3	..it is a trend and it is quite prevalent in a quite a number of engineering communities	30.43
P4	I I think it gives those people ??? because you can take control you can say I've done this, I've documented it, I can prove that I have done it - if they come back to me in two weeks' time I don't have to go oo er, oo-er so I think errm for me I think that's that's the way of keeping control and with that control, you get more comfortable….	30.50
P3	Yeah but it the question Samantha…?	31.15
F	Sam, sam is fine…	
P3	Is it because of track and trace basically to see, to see what has happened, or is it to….which is good because you can review information about projects or is it is it to err cover ourselves….	
P4	Probably a bit of both, if we are to be seen as doing our job properly and professionally, then may that be one of the things to be able to evidence that I have done x, y, z…. – they have been tasked with an objective and I know I have done that because here is the evidence	31.39
P1	So given the environment we work in which I appreciate has peaks and troughs for all of us, there is a high paced, there's lots of things going on….you've all got, everyone has a task list as long as your arm kind of thing, there is always things to do, so you are right, it is noticeable, we do….	
P5	I hate emails…I get thousands of emails	
P1	Yeah but we do use it don't we, everybody does use it the "this is my way of knowing that I've done a task and its recordable", and its done and I can	32.15
P6	And someone's <inaudible>	32.22
P5	But I have too many, I can't read them…	
P4	But if you had that many people coming up to you saying by the way Chantal, I've done this don't forget this, don't forget that	32.28
P1	Arrrghhhh	
	<laughter>	
P2	This is actually important because in a previous company I had something which I thought was completely useless and pointless, actually very useless "effective email communication" becasue I see you know, email strains basically that go on forever, that's not a conversation. Either get off the email or IM and talk to each other rather than have endless emails talking about yes, no, whatever, it's just used wrong.	32.37

P4	Yeah, For me that's like Email etiquette but that doesn't erm, that doesn't, that doesn't give them anymore confidence, if its documented than I know I have done my job properly.	33.03
P1	And even actually, having been privy to some of the stuff you guys have done over the years with customers where you are on a bridge and your all investigating an issue, umm if it was all verbal you wouldn't have a record of some of the things you are trying cos I've seen this, you guys have said well look here's the transcript from the IM session we have just had you'll see up here at x point we did this and you know, so actually again, its using, there is sort of a record there of what you've been doing as a collaborative team.	33.18
P5	Its got a measure of control and you can understand why…so you know whats going on	33.48
P1	<laughter> I think to some of the more uncertain, complex and ambiguous customers that we have to deal with its so, in fact I am thinking certain people <company name> over the years, really sort of antagonistic bridges, I mean you've been on more than anybody that, having that, taking it away from the verbal haggling ……having it written down helped I think, or seemed to help..	33.55
P6	To give Sam an idea, how long were those conference calls that you were on……	34.26
P5	Days	
	<laughter>	
P1	What was the worst, 18 hours I think you were on…	34.33
P2	18 hours?! Oh you smashed my record by a lot	
P3	I joined this session for training but before I even got there, there was this disaster and I think I ended up on the bridge for 18 hours….	34.40
F	Yeah, I mean the reason, the reason I threw that in there is quite often where you where you are inundated with umm emails, that if you took away the ones you cc'd on and all that, quite often it can be symptomatic of people covering their backs…	34.51
	Yeah <Multiple participants>	
F	…. and why are they doing that, well cos there is a lack of trust there…things won't get done etc etc. That's the only reason I pushed back, I am not suggesting that that's the case but I was just challenging	
P3	No, I think that's, I think that's perfectly valid, it's very easy to bully via email and you know, you see again when people feel passionately about some sort of technology or something you very soon get the but – but – but and it gets copied and then it gets copied again and before you know it the whole company's involved about a ridiculous argument about the kind of technology they are using	35.18
	<laughter>	
P3	…and then so you know, we seem to use email to protect but equally we use it to attack	

P1	…as a weapon sometimes	
F	It's an easy medium	
P3	It is an easy medium to do that because you don't have face to face	
P1	Yes	
F	I mean what would be the consequences, I mean having come from a technology company myself, I mean, what would be the consequences of somebody not winning that argument cos I know it's very much, you know, it's very knowledge based….I know this much, …but I know this much but I want this technology duh duh duh… I mean what are the consequences of somebody not winning that in the context of PS?	36.04
P2	I don't think it's as clear cut as that but lets put it this way, there are teams or people in the company that have a higher weight in deciding an argument than others. Not necessarily always the right people , but mostly the right people definitely, yeah umm so I have heard stories in many companies about things like that, it's nothing new, its nothing unusual, you have people who have personalities who want their way and they will do whatever they can to get to that point.	36.26
P5	But for the person who has lost the argument, it depends on their personality really, if they've a mind to be really upset about it because they are passionate about it, or whether they think, Oh Well, I've put my bit in….	37.10
P1	Yeah somebody's has made a decision	37.22
P5	…they've made a decision so it really depends	
P2	For some people it's really important that they can…..	37.26
P1	I suspect that's probably the key isn't it – has somebody made a decision on turf that you felt was your responsibility you know, you're accountable for that therefore you should be the ultimate decision maker. If somebody is imposing their decision on you, you probably feel a bit pissed off actually…	
P5	…..yeah absolutely	
P3	…whereas actually if you have contributed to a discussion and its gone to I dunno, Tom cos it's a big architecture thing, you've all had your say and Tom goes, in his ultimate wisdom "this is the way we shall go", then Ok cool, he listened, he heard what I had to say…	
P3	I wonder whether some if it is to do with the fact that you don't feel as though you were listened to as opposed to whether the argument is right or wrong	
P1	Yeah	
P3	..and I can think of a number of people, erm both here and elsewhere who become extremely demotivated disengaged and eventually left because they feel that erm there is too much dogma on one particular side and the opportunity to exchange and even be listened to, never mind whether you win or lose the argument is not there and I think technical teams in particular do….suffer from that	38.21

P1	Yeah they har….yes, they, which is why, it's a trite thing to say and way too simplistic but the number of times that you can get one of these email exchanges bubbling up as you say with the world and his dog getting copied in and its like ok, lets all get in a room and have a conversation and maybe the two key protagonists or maybe 4, 5 people but that's when you solve it, you don't ever get , you are less likely to get the resolution if the email thread continues…	38.50
P3	But even if you solve it ….	39.13
P1	We are still…harbouring of	
P3	There is still a harbouring of unsafe–ness with the people who don't feel that their argument was at least acknowledged and that, if that persists with dominate characters that's when you do you know what, I've had enough, I'm out here….I'm gonna change my….	39.16
P1	Yeah, yeah	
P3	And then they take….	
P2	Its bound to happen, its bound to happen in organisations. It depends how often it happens.	39.38
P1	I mean you're right, We all sat here in a nice open place and we enjoy it and we put a lot of effort into I mean alcohol is part of it, we do organise events, we organise meetings and things and it is about trying to break down inhibitions and get people to build relationships I mean that's why we do those events is cos we do want people to get to know each other a bit so they are not feeling concerned about the interpersonal relationships maybe even ummm even we have had at times quite high turnover in certain parts of the business and I think Frankie is spot on, its invariable because those people don't feel they are being listened to and it almost gets to a point where it's too late you can't suddenly start switching that on and say, hey I'm listening, I'm listening now, well you should……	39.43
P5	They are disengaged	
P6	They are disengaged and they effectively ..exit interviews….	
F	They have mentally left but not physically…it just follows….. Let me just, if we go back to the, in a minute we'll go back to the definitions, and what we have talked about is a lot is the environment, so being heard, being confident, interpersonal relationship etc and these are all quite extrinsic things which encourage us to be WILLING to share and, and, be ourselves. What about the able piece. What does an individual need? If they are in a remote team and they can't go for a drink with everyone else and they umm, their manager is remote and all of these extrinsic things are not available to them, what can, if anything, can individuals do to be ABLE to feel PS? What do they need?	40.40
P2	The need to be able to communicate more, or attempt to communicate more with the remote team	41.37
P5	They need a lot of praise, that they are doing a good job more so than you would probably give somebody	41.46

P2	That's not what they need to do….what do they need to do……they need to be more, let me give you an example, if if if there's a decision that's to be made, and no ones available, you have to document that and then discuss later what is the right thing to do for example, it is really difficult for someone to actually make a decision and then discuss it but that's a fact of people not being able to find the right person to discuss it with when you have a situation	41.51
F	So what do they need to be able to make that decision?	42.29
P2	They have to be more knowledgeable in some areas because they have to be more independent, and that's the selection process which we have in place already.	42.32
F	So, ummm they need to know stuff about the decision…but there are people who still know STUFF but they don't make the decision	42.46
P4	They need to have that confidence, confidence in themselves	
P2	And the authority yeah…..	43.03
P4	that they can, they can do that…and how do they get that…ummm manager <inaudible>	
P1	I think they also they also do need the capability of getting on the phone, pick up the phone, get on IM, get hold of somebody if you are unsure or uncertain about something	43.19
P4	But that's just a confidence thing…..	
P1	I think you are absolutely right, yes theres a sort of is a tool set, they have to access to the toolset set	
P5	Sometimes not knowing, they have to find the answer out	
P2	My point was they will be in a situation when they don't have anyone on the otherside to help, they won't be sure about what to do next, they have to make a decision, to make a call because it's a crisis, they have to do something on the spot….	43.40
P1	….it must happen to your guys you know, they get woken up in the middle of the night..on the phone…2 in the morning….	43.55
P5	Yes Les gets woken up in the middle of the night	
	<laughter>	
P1	Actually your guys are all very PS cos they know they've got Les there at the end of a phone any time of the day	44.06
P4	Yeah, hopefully they have the confidence that they get the time never mind the time I can ??? I can time	
P3	That's a High degree of self-management that's really. It comes with experiences	

F	Yeah, experience I'm hearing that a lot…. you just make, I know it's a joke, they know they have Tom there on the end of the phone but maybe there is something about having support, the right support, whatever that looks like	
P6	Yeah I think you know you feel safe if someone's got your back and you can reach out	44.46
P2	It's not always possible with your team it is, with mine it may not always possible	44.51
P3	It's very rare though that you get somebody who operates solely as an island	45.01
P2	Well we have a few cases!	
P1	Well that's why, I mean, you talked about your weekly meetings and your daily scrums is the chance, people get the chance to kind of	45.03
F	But does that make them feel safer or less safe being, operating as an island..	
P2	I don't think they will feel safe, as safe as we do here….	45.15
P3	I think that's what I am sayin..I can't envisage that there are situations where you could set that up so they are totally an island…..	45.17
P5	We have team members that are 8 hours behind, or in front, one or the other….there is a very small amount of the day when they can feel confident, and then it becomes night time and everybody's left so they spend most of their day as an island and that is very true.	45.30
P1	Yes	
P3	But ultimately they can still communicate. Whether there is a delay in that communciation….	45.47
P1	I mean Stu, Stu, he's left so we can talk about him, Stu had that same issue, being 8 hours behind on the West coast he I mean, the relationship just died over a long period of time….	45.54
P3	Yeah but what he learns with that is agility	46.08
P2	You can't rely….	
P3	So if your, if your job, and you feel PS is dependent on agility then that's where that situation becomes difficult	
F	So tell me what you mean by agility, just unpick that for me	46.11
P3	If you have to respond to something quickly and you have no support mechanism within your 8 hour window that's when you're Psychologically unsafe….	46.20
P1	Correct	
P3	… if you can pre-plan your work so that you can work in an environment where you follow the sun, and that is done quite often. Then there is no issue here.	46.31
P1	Yeah yeah yeah	
P3	…before when we just followed the sun and we have a hand over process and we keep going and it doesn't matter than somebody was in Japan earlier and your	46.43

	now in the UK. You could still get your work done. So the PS mechanisms there is how much you need to plan and how reactive you need to be	
P1	Is there something… I mean you talk about the 8 hour, its almost as if, is there something about the fact that you're able to handover stuff at the end of the day and your not, not having to go….	47.03
	No (Multiple replies)	
P5	It doesn't work like that….	
	Well I just wondered is that an issue thought, is it an issue because he is almost having to go to sleep on the fact that he hasn't resolved stuff because he is waiting for you to get up in the next day….	47.15
	For example we'll do a design, and he may have be two variations that he could do, quite equal over the design and he doesn't know where to go with it, he has 8 hours then to wait til he can bounce it off somebody on which way to go, which means he is unproductive in his view of that day, erm so for him, he must feel pretty……	47.24
P2	We have a measure of that, we can measure it the, the level of anxiety because I occasionally get panic emails from everybody in the team right, the frequency from the remote members, ??? the most furthest away, is far more prevalent because he doesn't have, if there is panic in the customer, project, support or whatever or there is a decision to make he knows hes got a very small window to get people to support him with things he is not necessarily familiar with….	47.49
P3	So what that's telling me is that the agility with which we need to respond to the work that you've got to do doesn't make remote working a viable option for people to feel safe	48.20
P5	Errrrrrrr no. I would say that time difference was too much compared to the other time difference, we had a lot more overlap time	48.32
P2	It's an extreme	48.41
P5	Because I have calls at 11, 12pm, 10pm if something has gone horribly wrong and George has as well	48.43
P3	So there is a window of time whatever that is beyond which it becomes difficult	48.50
P5	Yeah but I think they procrastinate over it because they know its late for us to a point to of where they are in a state. They wouldn't contact you when they were a bit like wooooo cos they think it'll be alright but then it just goes and then isn't alright	48.52
P2	Yeah we have to deal with the time, its not perfect, we don't deal with it perfectly	49.12
P3	Not if you are individual	
P2	Yeah but the point is it's a real issue, its not something we can avoid. We can't follow the sun in every single line of….	49.21
P1	No	

P3	No, No No, I am suggesting that PS comes from…..	
P1	..comes from the fact that you are able to offload it almost at the end of the day or the end of your shift. Actually, actually I notice that with sales people, are ummm… can be , I guess they operate in a world in which PS can be sort of a bit up and down in a day cos they are getting yes no decisions all the time, umm and having, whenever I am managing a sales person directly, will always ring them first thing and at the end of the day that is the best way that you can keep a sales guy Buoyed up and kind of ready for the next day because you leave it overnight they will sit and dwell on the fact that they didn't win that deal or they got a bad email or they've not progressed something, so if you don't catch them at the end of the day, the next day is a much harder job to get them back up again and get them out and, pick up a boxer - get out there, come on…umm so yeah its that touch point at the beginning of the day and the end of the day that makes a big difference and I guess that's what you miss with Kirk in that you can't… you can do it at the beginning of the day but at the end of the day he's there going hmmmm	49.36
P5	We've tried to alleviate that by putting somebody in Boston so he has somebody to bounce but it's still hard	50.41
P1	Its still hard yeah	
P4	So its different forms of communication, so whether its 8 hours, every 12 hours, every 8 hours or every 4 hours it just having somebody to talk to ..?????	50.51
P5	I think ????? teams especially designers want to bounce things off people	
P2	And we are all geared up to be very ??? we encourage. We can't say that these people can bounce ideas and these can't, we can't do that.	
F	Look, what I am hearing you say, especially with your sales analogy there, that the responsibility for PS is almost entirely in the hands of the manager, agree, disagree?	51.18
P2	Primarily but not entirely, I think that yes it is predominantly the managers role but there is certain aspect of what the other person is like, does he seek support in the right ways, communication in the right ways	51.32
P1	Yeah I mean, your first word there, willing, any of us, you've gotta be willing to show and do this stuff, so if you are not willing to do that stuff it doesn't matter how enabling your manager is or what a good job your manager is doing at making you feel able to do it, if you are not willing to do it.	51.50
F	So why would you not be willing to do it?	52.13
P6	Cos they don't feel psychologically safe	
P2	Yes, that's probably it….	
F	So if the willing is making the environment such that that the individual is willing to come to you or phone you at 11 at night or reach out and they are willing to do it because the environment is safe for them, what do they need to be ABLE, what skills set do they need to be ABLE to help themselves feel PS as well. Because can it all be in the hands of the manager/organisation?	

P5	You have to be able to understand consequence and not be frightened of them, consequence so some people are naturally more err nervous than others when it comes to have I met my goal, have I not met my goal umm and the older you get, the more you ask the question, actually, you know, what does this matter to the price of fish and experience allows lots of us to go, actually it isn't as frightening as I might of thought it was previously and if you've got people who are anxious because they are imposing their own standard of measure on that then they're going to impose a level of fright on themselves	52.51
P1	Yeah paralysing kind of thing	53.39
P5	Yeah and if they don't have the confidence then to, to work out how to address that and they don't have the tool kit to go actually no-body died	
P1	The sun still came up	
P5	The sun still came up in the morning you know, so its as much about your own reactions to events as it is about what the manager can do, what the process can do what the procedure can do …	53.52
P2	It is your reaction…Chantal picked that up nicely, it, it is the environment you work in basically. I've been in blame environments where mistakes is punished straightway and I think that's the worst environment	54.04
P4	Yeah but it was your fault	54.16
	<laughter>	
P6	That why he left!	
P2	So this is one, er or the ???? one, so that's, that's my view, I mean, if, if you make the environment, if you make the environment, the work environment, the culture a blame culture in the team, the ???? wherever, then you won't get happy people.	54.23
P5	I get that but the question was about what could the individual do.	54.41
F	…..So assuming that you guys……	
P1	…..Some people, some people wear that responsibility greater don't they…..	
P5	….On the assumption that we have created a safe environment, what does and individual bring to that equation was how I understood…	
F	Yes, so you have articulated beautifully all of the environmental aspects that would make somebody willing, so you are creating safety by communicating with people, supporting them, being there for them all those great things. So you've come here…..so what does the individual need to do? Now I am hearing experience, agility, you mentioned self-confidence, so when you are looking to bring somebody in to your wonderfully safe environment, what do you need them to have to flourish and be able to show themselves?	
P2	Good Question! I would say not to be afraid to make mistakes and learn from them, I dunno if that's the only thing but that's…..	55.34

P1	That is something that kind of need to learn, you know, you don't not everyone has that naturally in them, oh yeah I can make mistakes and we'll all be fine, I'll learn from them. Actually the human reaction, I see this in Harriet actually my 8 year old, its like, you criticise her, floods of tears and its like..awwww you know, but actually even if you do it in the most constructive positive way, and say "hay you know, lets learn from this no-one is cross" she still kind of wells up and that's the sort of, there is a human instinct there which is don't want to be perceived to be….	55.43
F	But does that go back to your adult statement?	56.15
P1	Well yeah maybe yeah	
P3	To me it does	
F	Cos that could be a defence mechanism	56.19
P1	Yeah, yeah, I see what you mean….	
P5	To me the more experience you gain in the work environment or work in generally, the safer you feel in yourself…mistakes will happen period. You've got to learn from them rather than "oh my god what did I do"….	56.23
F	So its taking your experience and when, when, you trip and fall it's about learning from that erm and building on your, your experience as well. OK. Umm in the people who, when we were talking about the guys who were having these discussions, everyone wants to be heard, errrmm, are there any, ermm I am trying the phrase the question…..erm are there any…what do they need to think or believe when they are contributing?	56.44
P3	That they are being listened to	57.25
F	That they are being heard	
P2	That their opinion matters that their view matters, but not just a monkey ??? ????? so you need to you need to drive forward for that sort of interaction …	57.29
P3	They need to understand that they have respect	57.46
P1	No one wants to be ridiculed. Laughter	
P5	I think they also need to know what they should give you for you to believe they are succeeding. Cos a lot, I have various members, some that go…ok…for me to …….. some literally don't ring you at all and you are forever chasing them, other ones are like OK for you to feel confident that I am doing stuff what do you need? And if you start ??? it's a lot easier than having to chase them what you done duh duh duh err as opposed to the one that says what do you need from me and then I have the others who literally come in and go bleurgh…OK so you've got "bleurgh" so what do you want me to do with it. They don't want me to do anything with it they just wanna go "bleugh". And this can happen every day. And you, so you vary what you do with various individuals	57.58

F	So from your perspective the preference is out of the ones you have to chase and the ones that come to you and go this is what I've done, what is the ones that say this is what I've done have or do that is different from the ones you have to chase,. What do you think they've got. What makes a difference?	58.48
P5	I think they are more confident in their role of what they should deliver,	
F	So what do we do about the new starters, the youngsters coming in cos we do have a challenge globally around talent, that a lot of….essentially we are all getting older, and we having to bring in new talent who maybe don't have that experience so what do we need to look for. They haven't got the experience so what do we need?	59.19
P2	So, OK, in my view, the first thing is when you select a candidate, you look for some traits not just knowledge, you are looking for ability to learn, to communicate you are looking for intelligence, you are looking for problem solving, you are looking for go to attitudes, you are looking for a number of things that is not necessarily what the CV says and there is no easy ways to assess it but there are ways	59.40
F	There are…	
P2	So you are looking for the type of person, if that new starter has those traits it's a lot easier to put them in the team and you know start them up as team members basically. With other individuals who may have all the technical abilities but less the attitude it may be more difficult. They could be very valuable to the team but it might what you are going to get productive in part, members of the team basically, so it does depend a lot on how you select those individuals but there's always, I mean obviously not about training, but they need training to understand what the job is, what the product is, what they're expected… etc etc but its not just that, I think some individuals have talents that not everyone has…	
P3	Its making Individuals like that feel safe and it used to be called apprenticeships in my day….	1.00.59
F	They are coming back!	
P3	And I am very glad to see that because that's, that is the way you harness and bolster the soft side of peoples ability, so you have the ability side of it which is absolutely right, but they don't know how to apply that until, and and it is a process of learning in the same way we've all had to learn it and some of us have learnt it through hard knocks and some of us have learnt it because we have been part of an apprenticeship …….	1.01.04
P5	So we've been interviewing graduates recently who've had no work experience and it's a, its a very different process because you look for something that they are engaged in to see if they are errmm passionate about something so that then you can go, OK, so can I put that elsewhere…they don't know how to answer interview questions so you might end up talking about football because that's what they know.	1.01.36
P1	Yes, but that's what you want to hear about isn't it	

P5	Yeah. So it's a very different process, so you know they've got some sort of educational background but you need to bring out their characteristics cos ultimately you wanna, can I work with this person, erm are their characteristics…when they talk about something that they are passionate, is it engaging or is it just arrogant and there are a very fine line so that's what we're looking for at the moment…. Not the arrogant	1.02.09
	<laughter>	
P2	I was wondering…	
P5	To me is a very, it's a weird interview compared to the normal one which are skilled based	1.02.36
P1	Which is skills based	
F	Yeah, yeah. And you mentioned intelligence there, you mentioned intelligence umm, what do you mean by intelligence, because it, from a psychological perspective that's a gamut of stuff	1.02.44
P1	Yeah…	
P2	Intelligence is, is, is very difficult to pin down, I think to me its ability to adapt to situations, unknown situations. When I evaluate someone who doesn't necessarily have the the knowledge base, but how can you adapt to a situation you know nothing about, what are, what's your chain of thought, how would you think about, attack that situation, resolve that problem	1.02.55
P5	For me its problem solving and sort of logical thinking….	1.03.25
P2	…I think we are saying the same thing	
P5	…Cos that's sort of my team area	
P3	I'd add emotional intelligence to that as well	1.03.34
P2	Ah, yeah, yeah	
P5	They cry during the interview!	1.03.37
P3	You know, it has been known…	
	<laughter>	
F	Yeah, this um… its intersecting cos you were saying one of the earlier you were saying about being able to plan, and if you could plan your day yet at the same time, we, who's day ever goes to plan and now your saying, right your saying well actually what you want is somebody who can adapt depending on what the day throws at you.	
P2	Yeah exactly, I mean the best, the best, those that we took on board as new starters in a team work the best are those who have the ability to think through problems in different ways …lateral thinking kind of people that did't get bogged down in "if that doesn't work, lets try"…brand new approach to a problem. Maybe we should do something a bit different. Those are the ones who always seem to have the best contribution to the company even	1.04.06

F	Uh huh, Yeah. So the are bringing new thoughts, new ideas ,,	1.04.44
P2	Yes, they don't get bogged down in old ways, same ways.	1.04.48
P3	I think they reap success quicker perhaps as well umm because they've got brains that allow them to back out of an alleyway and try another one whereas there are others who will just bang their heads against a brick wall and then cry.	
P5	The precondition is the environment that they work in has to allow them to do that…	
F	… That's right	
P3	… Correct	
P5	…and it doesn't always work that way	1.05.15
F	No it doesn't and I think you are right, theres been a a I mean theres been a lot of work done over the years around the environment, I mean starting with Maslow and Hertzberg, I mean long time that we need the environment for, to get innovation, we need to feel safe and have a supportive manager…all those things we have talked about absolutelyl. There has been less research done on how far does the, what do we need from the individual to meet the….because you could have the fantastic safe environment who is intelligent but what I am hearing you say its not just about being smart, or intelligent its about being smart, agile, adaptable. So to out that together with the environment then you are going to get quite a powerful productive employee. And yeah, the organisation has a part to play but so does the individual and there has been less research on that individual piece.	
P5	I IT companies there is a hell of a lot of change, constantly and I think that's very new to organisation for all of us, big massive organisation change where they split divisions, we have is almost daily weekly..	1.06.15
P1	Yeah the organisation almost reforms every day almost depending on what todays challenge is and that's, thats how it should be as that's how we will succeed. Some people love it …..	1.06.31
P5	….Some people thrive in that, some people hate it	
P1	…..Yeah some people hate it	
F	So whats the difference between the two, the people who thrive and the people who hate it because its not going away…	1.06.43
P	I suspect its something to do with erm people feeling err confident and happiness with the way things are and people who are pushing for change for good reasons. Not everyone likes change, not everyone wants to rock the boat as much. They want the boat to go faster, but they don't want to change direction necessarily rather ??? the thing is how much will the company let or allow them to change direction or rock the boat…. In terms of objectives and how things are done	1.06.52

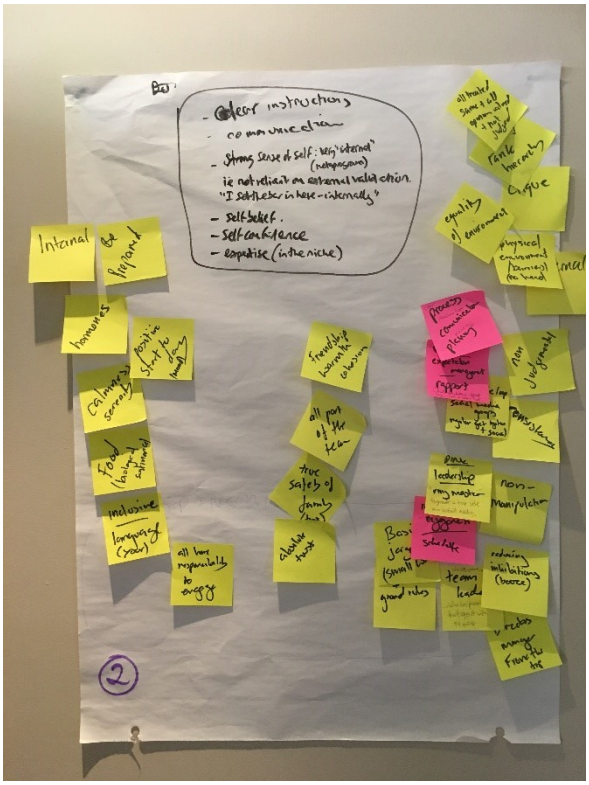
	I've been in companies where that's the way you do it, don't care about your ideas, do it that way because everyone else does it that way the company says that's the problem, go fix it now that way	
F	But those are, I mean from a research perspective, those kind of organisations are gonna struggle in this changing environment because as an organisation you need to be agile and what worked in the past may not work in the future because we are coming up with new stuff all the time, new technology is the big driver which is why we are focusing on this. So if you've got this changing environment, if you use your boat analogy, you know, some people are gonna like roll with the waves and other people are gonna get really really sea sick	1.07.46
P1	You definitely, I mean you definitely need people who are open minded and it comes back to that willingness to make mistakes or be prepared to make mistakes and willingness to learn and recognise that you don't know everything, I mean generally people that haven't thrived over at <Company name> the years are ones who come in thinking that, you know, they know everything, it needs to be their way, they're the best and everyone should follow them kind of thing. And its like that works on day 1 or 2 when actually we need their skillset, then stuff changes and a week or two later, if they are still having the attitude of yeah I know everything, it should be my way, they're not open minded, they're not listening to everyone else they are not reacting, the agility you know and all that sort of stuff and so the people who thrive here tend to be more, well, I don't know everything, this situation, I've never been in this situation before Ok, who do I need to help me solve this, or let's find a way to get round this problem…ermm	1.08.14
P2	It's a fine line cos many people think that we are paid to design by committee and those people will think that the only right way of doing it is actually collecting good ideas and then distilling it into something	1.09.07
P1	Yeah you're right, you can't all, you can't spend all day in a big room with everybody you know, its not a democracy, you can't all, if we all said, right, how do we make a decision let's all vote on it…	1.09.19
P2	You can't do that but then you have to make sure it's a forum to get people to contribute ideas	1.09.30
P1	Yeah…theres a ??? problem, how do we solve it, what options have we got, lets try and get as many options onto the table as we can…	1.09.37
P2	And someone has to make a decision at some point because that's the way it works. Its taking in views, its understanding that there's not just one way of doing things that's important for a company	1.09.42
P3	I think we need to look at their skills sets as well and make sure they are brought along because we, you know they come with a certain amount and if we are are changing constantly they may ??? and become obsolete	1.09.54
P1	Yep, and where they might feel PS for a while, suddenly its whoa…..	1.10.06
P5	Yeah…I dunno how to use this….	
F	And that's happening all the time in technology yeah	1.10.13

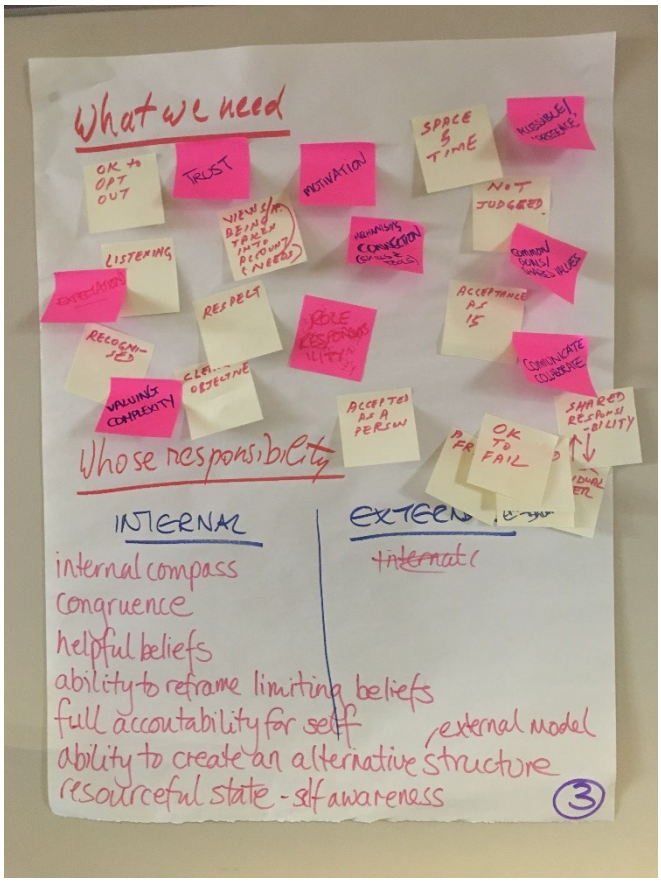
P2	All the time, all the time….	
F	You were an SME you know, in this, now we are not using this and so you are just minion like everybody else and that causes people to, you know their status has gone, you know that's a real wobbler for people…	1.10.15
P5	Absolutely	1.10.28
F	…a huge wobbler	
P1	Yeah you can imagine people being quite defensive as they see that happening, they become more and more defensive with their decision making to protect them	1.10.30
F	So what could that individual do, again there are things that the organisation can do, train them, support them etc but what could that individual do, in order to, where they feel they are becoming less safe because of this scenario, what do you think they could do to, to get themselves up	1.10.39
P	Its counter intuitive, but what they need do is to give, to give, you know dedicate time to retraining or training right and that's not easy to do in a development environment. They have to learn new stuff and they may not even want to anymore	1.10.55
P4	It's beeing able to say I am not adding value anymore	1.11.09
P1	That's the first thing. Recognising it isn't it	1.11.12
P4	A very brave thing to say	
	Yeah!	
P2	I am useless	
	<laughter>	
P1	I off to the dump, off to the compost heap	
P4	The individual has to have the confidence in themselves I have to do this, I recognise that when I joined the company of this size I added value, it now this size, it changed, I don't add much value now so I…..	1.11.23
P1	So again it's the relationship isn't it between the organisation and you as an individual cos you would hope the organisation, as soon as you start making those noises, would say hey come on, don't worry about it, lets, you can do this, there is an opportunity over here, we are growing, opening up all the time	1.11.38
P5	We need some people stand up and say, Ok this is new. I'd like to be involved in this if they don't have skills set	1.11.54
P1	Oh ok yeah yeah you right, them willing to volunteer at least	
P3	What if they don't have the skill set?	
P5	We can help that	

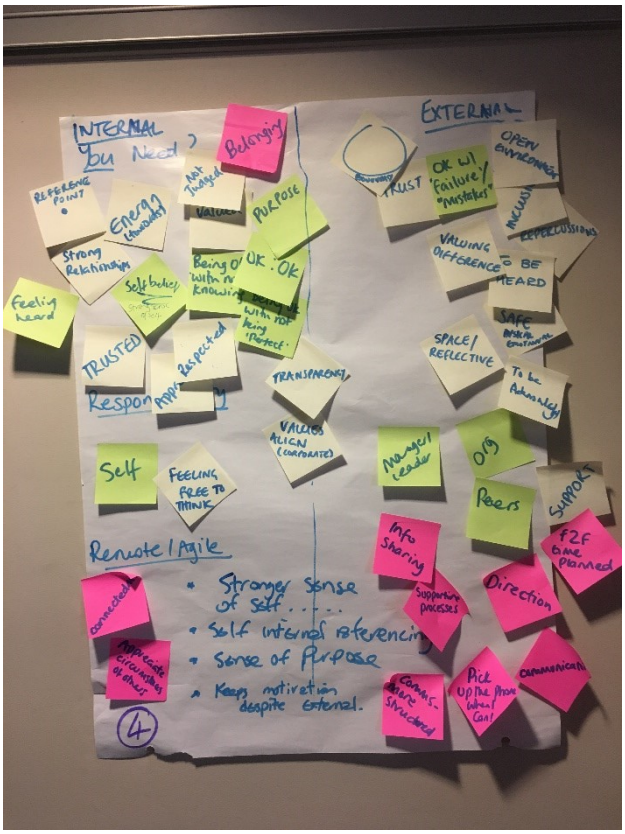
F	Yes cos that again that's meeting the organisation half way rather than dragging them through this new training	1.12.12
P5	Yeah its always better to retrain somebody than bring somebody totally in again, its far much more effort making sure they fit with the culture, make sure they have all background, its far easier to train somebody if they are willing	1.12.17
P2	Its very interesting because I think not everyone born in this world has the same capability for change some people are able to take change in their stride, some people are much slower to adapt I don't	1.12.33
P3	Is that a capability or an appetite?	1.12.49
P5	No, ability I have an example of a person who is actually very intelligent but just can't adapt he can't accelerate his way of life, he can't do more than small strides	
P3	Yeah, my question is, is that because they have less of an appetite for change rather than…	1.13.04
P1	..a particular skill	
P3	Whether they are capable of change	
P5	I can't answer that directly, indirectly I can see, I can see how much they suffer because of they because are not able to follow what others are doing because they are not able to you know, react in the same way, they are not able to go as far they are not able, they just feel miserable in some cases	1.13.12
P3	But it would be interesting to understand whether that that thing is due to the fact that they don't feel that they have a skill set or they don't want to make a commitment for a skill set or just don't understand how to fit in	1.13.37
P5	This is second information, but the person in question who's in our greater family went to a psychological and was told, I am not an expert so I don't know I am just repeating information here is that not everyone has the same abilities to, I mean, the example the person gave is if you are going from London to Glasgow by car, right, you may just be able to go that far in the car, you are the car going all the way to Glasgow you may be another car that may not be able to reach Glasgow basically because you don't have that stamina you may have to stop over, sleep, so… I don't know how true that is but that's the response	1.13.52
P1	But actually something, a physical capability of, of….	1.14.38
P2	…mental, mental more than physical	
P1	Mental..capable of change	
P2	Is it because…hes not young so maybe because he learned through his life that that's what you have to do	1.14.47
P1	??? under their control, well well, some people have to be in control or they need to feel in control of what's going on, what's happening to them whereas other people are a bit more like oh yeah you know, I get, I get the fact that I can't control everything and there's a big world out there that gonna happen to me and I have to learn how to deal with it.	1.14.57

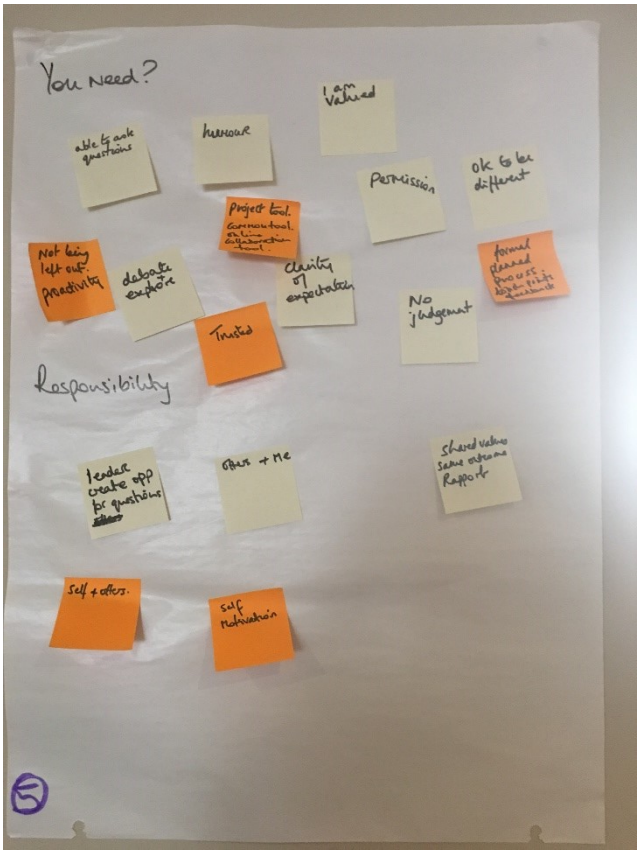
P5	The fact that some people take it as a personal insult so the fact that you've moved technology is obviously your fault, we didn't want you getting in the technology, it's nothing to do with you	1.15.15
F	But again you've got a very child response there, I don't know if you are familiar with the work of Eric Berne, Parent, Adult, Child, transactional analysis	1.15.25
P6	We did it in ??? very recently	1.15.33
F	Yeah, so any, that that defensiveness is a very child response and it happens. Absolutely, Interesting, thank you….any final contributions….	1.15.35
P5	Has two hours gone?	1.15.52
F	No, its half past but I am wrapping up now, we are going to start to wrap up….	
P2	Any other contributions <reference to food>	
F	Get stuck in, anything that doesn't get eaten will be tossed out to the masses	
P2	Oh, we don't want that then.	
P5	Get choffing then…	
F	Um, in return I thought, I might share something with you, I tell you what I'll close the focus group and then I'll share something that is relevant, I think its relevant. So thank you for that, I have ermm some really great stuff there and what I have for you is a debrief letter which is basically a thank you and if you are interested in what we are talking about, there are some articles here that you can have a look at particularly from Kahn and Edmondson. None of them did work in these VUCA environments, this is why I think a lot of the models that we use are kind of outdated now umm, Edmondson worked in healthcare, she did something in an office supplies company, but it was mainly healthcare and Kahn did his in an architectural firm in the 1990's. so no one has done this of research in these kind of fast moving environment, so maybe in two years' time you can add my name to that as well so, umm but it just tells you really what the process is < take one and pass it one> and how, if you wanted to contact me how you could and I will keep in touch with the report section.	1.16.12
	End of recording	1.17.26

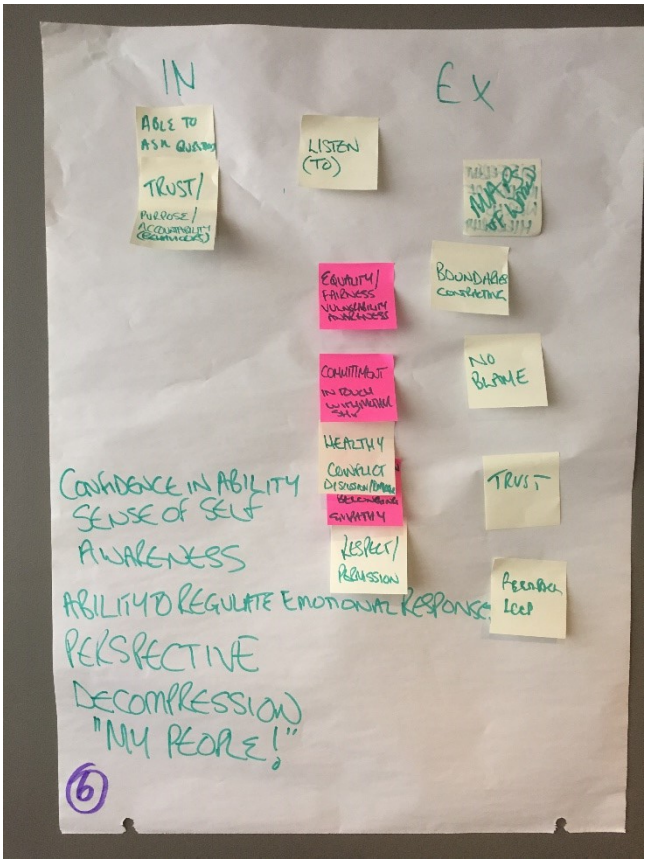
Appendix Q: Focus Group 3 Flip Chart Outputs

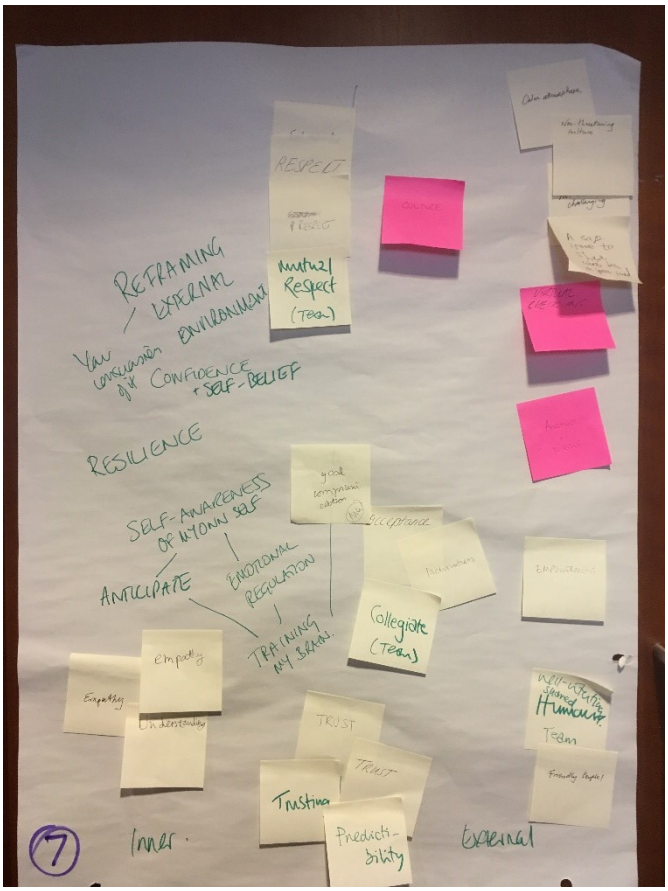


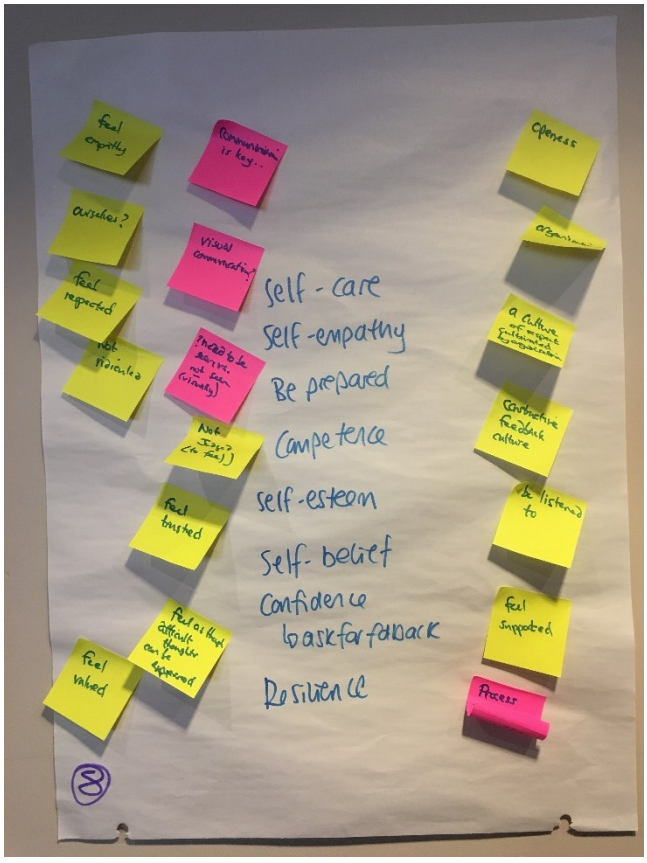





You need?
I am valued
behaviour
Permission
OK to be different
Project tool
formal planned
debate explore
clarity of expectation
No judgement
Trusted
Not being left out. proactivity
Responsibility
leader create opp for questions
Other + me
Shared values same outcome Rapport
Self + others
self motivation
5


IN
EX
ABLE TO ASK QUES
LISTEN (TO)
TRUST/
EQUALITY/ FAIRNESS
BOUNDARIES
NO BLAME
COMMITMENT
HEALTHY
TRUST
RESPECT/ PERMISSION
CONFIDENCE IN ABILITY
SENSE OF SELF
AWARENESS
ABILITY TO REGULATE EMOTIONAL RESPONSE
PERSPECTIVE
DECOMPRESSION
"MY PEOPLE!"
6


RESPECT
Mutual Respect (Team)
REFRAMING
/ EXTERNAL
ENVIRONMENT
CONFIDENCE
+ SELF-BELIEF
RESILIENCE
SELF-AWARENESS OF INTERNAL SELF
ANTICIPATE
EMOTIONAL REGULATION
TRAINING MY BRAIN.
Collegiate (Team)
Empathy
TRUST
Trusting
Predictability
Inner.
External
7


feel empathy
Communication is key..
Openness
answers?
Visual Communication
feel respected
self-care
self-empathy
Be prepared
Competence
self-esteem
Self-belief
Confidence
to ask for feedback
Resilience
feel trusted
feel valued
feel supported
Access
8

Appendix R: Analysis from Outputs of All Focus Groups

Step 1. All Outputs with Mentions per Group

ALL											
			Focus Group 3								
	Focus Group 1	Focus Group 2	Flip 1	Flip 2	Flip 3	Flip 4	Flip 5	Flip 6	Flip 7	Flip 8	
Self-confidence	1	1	1	1					1	1	**6**
Experience	1	1									**2**
Synthesise new knowledge	1										**1**
The ability to listen to criticism	1	1									**2**
Learning ability	1	1								1	**3**
Flexibility	1										**1**
The ability to evolve	1										**1**
Manage reactions/emotional regulation	1	1						1	1		**4**
Self-respect	1	1									**2**
Self-esteem	1		1							1	**3**
Outside support and interests	1										**1**
No emotional investment in the company	1										**1**
values/vision/Purpose alignment	1		1			1	1	1			**5**
Power dynamic	1										**1**
Leadership style	1										**1**
Inconsistent messages	1										**1**
Risk	1										**1**
Familiarity/personal relationship	1										**1**
Predictable reactions /volatility/behaviours	1										**1**
Confidentiality	1										**1**
Reviews	1										**1**
Development	1										**1**
Manager keeps word	1										**1**
Non-oppressive environment	1										**1**
Rivalries/internal Competition	1										**1**

Hierarchical conflict	1										1
Strong successful manager	1										1
Autonomy/latitude	1										1
Appropriate Leadership Style for Indiv.	1										1
Organisational flexibility	1										1
Relevant goals	1										1
Continuous improvement	1										1
Financial security	1										1
Perceived judgements	1										1
Confidence	1										1
Adopting persona	1										1
Capabilities	1										1
Experience	1										1
"Measure of People"	1										1
Body language	1										1
Facial expressions	1										1
Clear who you are	1										1
Communication skills	1										1
Emotionally "alert"/aware	1										1
Emotional intelligence	1										1
Adapt and change	1										1
Self- confidence	1										1
Ability to take criticism	1										1
Self-esteem	1										1
Psychological robustness	1										1
Life outside of work /work life balance	1										1
Flexibility	1										1
Evolution	1										1
Locus of control	1										1
Low emotional engagement	1										1
Self-reliance	1										1
Curiosity	1										1
Novelty/innovation	1										1
Learning ability	1										1
Ability to Synthesize new knowledge	1										1
Suspension of ego	1										1
Willing to learn from others	1										1
Deal with the unexpected	1										1
Adult ego state		1									1
Perceived judgement		1									1

Confidence		1									1
Emotional control		1									1
Emotional intelligence		1									1
Self-confident		1									1
Knowledgeable		1									1
Independent		1									1
Self-management		1									1
Experience		1									1
Agility		1									1
Ability to "offload"/switch off		1									1
Willing		1									1
Perspective		1									1
Reaction management		1									1
Take risks,		1									1
Learn from Mistakes		1									1
Proactive		1									1
Intelligence		1									1
Problem solving		1									1
Ability to deal with the unknown		1									1
To adapt		1									1
Logical thinking		1									1
Lateral thinking, diffnt perspectives		1									1
Creativity		1									1
Self-awareness		1									1
Locus of Control		1									1
Communication skills		1									1
Other people’s reactions		1									1
Judgement		1									1
Leadership style		1									1
Conflict		1									1
Culture		1									1
Learning environment		1									1
Trust		1									1
Aligned goals		1									1
Fun		1									1
Collaboration		1									1
Frequent contact		1									1
Reassurance/praise		1									1
Clarity of actions/activities		1									1
Norms		1									1
Control		1									1
Boundaries		1									1

Ability to be heard/contribute		1									**1**
Interpersonal relationships		1									**1**
Authority		1									**1**
Clear expectations		1									**1**
Support		1									**1**
Trust		1									**1**
Problem solving		1									**1**
Independent		1									**1**
Knowledgeable		1									**1**
Logical thinking		1									**1**
Able and willing to change		1									**1**
Self-management		1									**1**
Ok to make mistakes		1	1		1						**3**
Intelligence		1									**1**
Emotional intelligence		1									**1**
Open minded		1									**1**
Ability to adapt		1									**1**
Lateral thinking		1									**1**
Be able to switch off at the end of the day		1									**1**
Agility		1									**1**
Support at work		1								1	**2**
Trust	1	1		1		1		1	1	1	**7**
Being listened to/feeling heard			1		1	1		1		1	**5**
Courage			1								**1**
Self-disclosure			1								**1**
Time to think/reflect			1		1	1					**3**
Consistency of rules			1								**1**
Rewards across teams			1								**1**
Agreed team behaviours/roles			1								**1**
Boundaries			1					1			**2**
Calling out of inappropriate behaviours			1								**1**
encouraged to challenge/discuss/ask Qus			1				1	1			**3**
Relaxed and fun environment		1	1								**2**
Social people			1								**1**
Absence of judgement			1		1	1	1				**4**
Clear expectations/goals/outcomes			1	1	1		1		1		**5**
Discreet colleagues - no gossip			1								**1**
Opinions valued			1		1					1	**3**

Mutual respect			1		1	1		1	1	1	**6**
Diversity			1								**1**
Group think not tolerated			1								**1**
No hierarchy			1								**1**
Inclusion			1						1		**2**
Permission to be honest/vulnerable			1							1	**2**
Collaboration			1								**1**
Team spirit			1	1					1		**3**
Positive encouraging environment			1								**1**
Company culture			1							1	**2**
Be prepared				1						1	**2**
Hormones/mood				1							**1**
Calmness/serenity				1					1		**2**
Food/sustenance				1							**1**
Inclusive language				1							**1**
Friendship/warmth				1					1		**2**
Cohesion				1							**1**
Recognition					1						**1**
Acceptance as a person					1	1	1		1		**4**
Accountability					1			1			**2**
Strong relationships						1					**1**
Self-belief			1	1		1			1	1	**5**
Strong sense of self				1		2		1			**4**
·OK to not know						1					**1**
·OK with not being perfect						1					**1**
·Transparency						1				1	**2**
·Humour							1		1		**2**
·Rapport							1				**1**
·Healthy conflict								1			**1**
·Contracting								1			**1**
·No blame								1			**1**
·Empathy									1	1	**2**
·Predictability									1		**1**
·Empowerment									1		**1**
·Safe Space to share									1		**1**
·Not too challenging									1		**1**
·Non-threatening									1		**1**
·Not ridiculed										1	**1**
·Constructive feedback										1	**1**
·Growth mind-set			1							1	**2**
·Self-awareness			1		1			1	1		**4**
·Mindful			1								**1**

·Self-efficacy			1					1			**2**
Agency			1								**1**
·Communication				1							**1**
·Internal validation				1		1					**2**
·Expertise				1							**1**
·Internal compass					1						**1**
·Congruence					1						**1**
·Helpful beliefs					1						**1**
·Reframe limiting beliefs					1				1		**2**
·Resourceful state					1						**1**
·Motivation						1					**1**
·Perspective								1			**1**
·Decompression								1			**1**
·Resilience									1	1	**2**
·Training my brain									1		**1**
·Self-care										1	**1**
·Self-empathy										1	**1**
·Competence										1	**1**

TOTAL RESOURCES IDENTIFIED: 205

Step 2 – Divided into Intrinsic and Extrinsic Resources.

EXTRINSIC RESOURCES	
Resource	**Mention** (by groups)
Outside support and interests	1
Values/vision/Purpose alignment	5
Power dynamic	1
Leadership style	1
Inconsistent messages	1
Risk	1
Familiarity/personal relationship	1
Predictable reactions /volatility/behaviours	1
Confidentiality	1
Reviews	1
Development	1
Manager keeps word	1
Non-oppressive environment	1
Rivalries/internal Competition	1
Hierarchical conflict	1
Strong successful manager	1
Autonomy/latitude	1
Appropriate Leadership Style for Indiv.	1
Organisational flexibility	1
Relevant goals	1
Continuous improvement	1
Financial security	1
Leadership style	1
Conflict	1
Culture	1
Learning environment	1
Trust	1
Aligned goals	1
Fun	1
Collaboration	1
Frequent contact	1
Reassurance/praise	1
Clarity of actions/activities	1

INTRINSIC RESOURCES	
Resource	**Mention** (by groups)
Self-confidence	6
Experience	2
Synthesise new knowledge	1
The ability to listen to criticism	2
Learning ability	3
Flexibility	1
The ability to evolve	1
·manage reactions/emotional regulation	4
Self-respect	2
·self-esteem	3
·no emotional investment in the company	1
Perceived judgements	1
Confidence	1
Adopting Persona	1
Capabilities	1
Experience	1
"measure of people"	1
Body Language	1
Facial expressions	1
Clear who you are	1
Communication skills	1
Emotionally "alert"/aware	1
Emotional intelligence	1
Adapt and change	1
Self- confidence	1
Ability to take criticism	1
Self-Esteem	1
Psychological robustness	1
Life outside of work /work life balance	1
Flexibility	1
Evolution	1
Locus of control	1
Low emotional engagement	1

Norms	1
Control	1
Boundaries	1
Ability to be heard/contribute	1
Interpersonal relationships	1
Authority	1
Clear expectations	1
Support	1
Trust	1
Consistency of rules	1
Rewards across teams	1
Agreed team behaviours/roles	1
·Boundaries	2
Calling out of inappropriate behaviours	1
Encouraged to challenge/discuss/ask Questions	3
Relaxed and fun environment	2
Social people	1
Absence of judgement	4
Clear expectations/ goals/ outcomes	5
Discreet colleagues - no gossip	1
Opinions valued	3
Mutual respect	6
Diversity	1
Group think not tolerated	1
No hierarchy	1
Inclusion	2
·Permission to be honest/vulnerable	2
Collaboration	1
Team spirit	3
· Positive encouraging environment	1
· Company culture	2
· Food/sustenance	1
· Inclusive language	1
· Friendship/warmth	2
· Cohesion	1
· Recognition	1
· Acceptance as a person	4
· Accountability	2
· Strong relationships	1
·Transparency	2

Self-reliance	1
Curiosity	1
Novelty/Innovation	1
Learning Ability	1
Suspension of ego	1
Willing to learn from others	1
Deal with the unexpected	1
Adult ego state	1
Perceived judgement	1
Confidence	1
Emotional control	1
Emotional intelligence	1
Self-confident	1
Knowledgeable	1
Independent	1
Self-management	1
Experience	1
Agility	1
Ability to "offload"/switch off	1
Willing	1
Perspective	1
Reaction management	1
Take risks,	1
Learn from mistakes	1
Proactive	1
Intelligence	1
Problem solving	1
Ability to deal with the unknown	1
To adapt	1
Logical thinking	1
Lateral Thinking, Different Perspectives	1
Creativity	1
Self-Awareness	1
Locus of control	1
Communication skills	1
Other people's reactions	1
Judgement	1
· problem solving	1
Independent	1
Knowledgeable	1

·Rapport	1
·Healthy conflict	1
·Contracting	1
·No blame	1
·Empathy	2
·Predictability	1
·Empowerment	1
·Safe Space to share	1
·Not too challenging	1
·Non-threatening	1
·Not ridiculed	1
·Constructive feedback	1
·Communication	1
·support at work	2
Trust	7
Being listened to/feeling heard	5
Ok to make mistakes	3
90	137

Logical thinking	1
Able and willing to change	1
Self-management	1
Intelligence	1
Emotional intelligence	1
Open minded	1
·ability to adapt	1
·lateral thinking	1
·be able to switch off at the end of the day	1
Agility	1
·courage	1
·self-disclosure	1
Time to think/reflect	3
Be prepared	2
Hormones/mood	1
Calmness/serenity	2
Self-belief	5
Strong sense of self	4
·OK to not know	1
·OK with not being perfect	1
·growth mind-set	2
·Self-Awareness	4
·mindful	1
·Self-efficacy	2
Agency	1
·Internal validation	2
·Expertise	1
·Internal Compass	1
·Congruence	1
·Helpful beliefs	1
·Reframe limiting beliefs	2
·Resourceful State	1
·Motivation	1
·Decompression	1
·Resilience	2
·Training my brain	1
·Self-care	1
·Self-empathy	1
·Competence	1
·Humour	2
107	145

Step 3 – Removed Duplicates and synonyms

1. Extrinsic

EXTRINSIC RESOURCES			
Resource	**Mention** (by groups)		
Outside support and interests	1	Outside support and interests	1
Values/vision/Purpose alignment	5	Values/vision/Purpose alignment	5
Power dynamic	1	Power dynamic	1
Leadership style	1	Leadership styles	3
Inconsistent messages	1	Inconsistent messages	1
Risk	1	Risk	1
Familiarity/personal relationship	1	Familiarity/personal relationship/interpersonal relationships/strong relationships	3
Predictable reactions /volatility/behaviours	1	Predictable reactions /volatility/behaviours	1
Confidentiality	1	Confidentiality	1
Reviews	1	Reviews	1
Development	1	Development	1
Manager keeps word	1	Manager keeps word	1
Non-oppressive environment	1	Non-oppressive environment	1
Rivalries/internal Competition	1	Rivalries/internal Competition	1
Hierarchical conflict	1	Hierarchical conflict /no hierarchies	2
Strong successful manager	1	Strong successful manager	1
Autonomy/latitude	1	Autonomy/latitude	1
Organisational flexibility	1	Organisational flexibility	1
Relevant goals	1	Relevant goals	1
Continuous improvement	1	Continuous improvement	1
Financial security	1	Financial security	1
Conflict	1	Conflict /Healthy Conflict	2
Culture	1	Company Culture	3
Learning environment	1	Learning environment	1
Trust	1	Trust	1
Aligned goals	1	Aligned goals	1
Fun	1	Relaxed and fun environment	3
Collaboration	1	Collaboration	1
Frequent contact	1	Frequent contact	1
Reassurance/praise	1	Reassurance/praise	1

Clarity of actions/activities	1	Clarity of actions/activities	1
Norms	1	Norms	1
Control	1	Control	1
Boundaries	1	Boundaries	1
Ability to be heard/contribute	1	Ability to be heard/contribute	1
Authority	1	Authority	1
Clear expectations	1	Clear expectations/ goals/ outcomes	6
Support	1	Support	3
Trust	1	Trust	1
Consistency of rules	1	Consistency of rules	1
Rewards across teams	1	Rewards across teams	1
Agreed team behaviours/roles	1	Agreed team behaviours/roles	1
·Boundaries	2	·Boundaries	2
Calling out of inappropriate behaviours	1	Calling out of inappropriate behaviours	1
Encouraged to challenge/discuss/ask Questions	3	Encouraged to challenge/discuss/ask Questions	3
Social people	1	Social people	1
Absence of judgement	4	Absence of judgement	4
Discreet colleagues - no gossip	1	Discreet colleagues - no gossip	1
Opinions valued	3	Opinions valued	3
Mutual respect	6	Mutual respect	6
Diversity	1	Diversity & Inclusion	4
Group think not tolerated	1	Group think not tolerated	1
Permission to be honest/vulnerable	2	Permission to be honest/vulnerable	2
Collaboration	1	Collaboration	1
Team spirit	3	Team spirit	3
Positive encouraging environment	1	Positive encouraging environment	1
Food/sustenance	1	Food/sustenance	1
Friendship/warmth	2	Friendship/warmth	2
Cohesion	1	Cohesion	1
Recognition	1	Recognition	1
Acceptance as a person	4	Acceptance as a person	4
Accountability	2	Accountability	2
·Transparency	2	·Transparency	2
·Rapport	1	·Rapport	1
·Contracting	1	·Contracting	1
·No blame	1	·No blame/Ok to make mistakes	4

·Empathy	2	·Empathy	2
·Predictability	1	·Predictability	1
·Empowerment	1	·Empowerment	1
·Safe Space to share	1	·Safe Space to share	1
·Not too challenging	1	·Not too challenging	1
·Non-threatening	1	·Non-threatening	1
·Not ridiculed	1	·Not ridiculed	1
·Constructive feedback	1	·Constructive feedback	1
·Communication	1	·Communication	1
Trust	7	Trust	7
Being listened to/feeling heard	5	Being listened to/feeling heard	5
		77	137

2. Intrinsic Resources

Self-confidence	6	Self-confidence/ Confidence	10
Experience	2	Experience	2
Synthesise new knowledge	1	Synthesise new knowledge	1
The ability to listen to criticism	2	The ability to listen to/take criticism	3
Learning ability	3		
Flexibility	1		
The ability to evolve	1		
Manage reactions/emotional regulation	4	Emotional control/ Manage reactions/emotional regulation/ Self-management/ Reaction management	8
Self-respect	2	Self-respect	2
Self-esteem	3	Self-esteem	4
No emotional investment in the company	1	No emotional investment in the company	1
Perceived judgements	1	Perceived judgements	1
Adopting persona	1	Adopting persona	1
Capabilities	1	Capabilities	1
"Measure of People"	1	"Measure of People"/ Emotional intelligence/Body Language/Facial Expressions	6
Clear who you are	1	Clear who you are/ Self-awareness/Sense of Self	7
Communication skills	1	Communication skills	2
Emotionally "alert"/aware	1	Emotionally "alert"/aware	1
Adapt and change	1	Adapt and change/ Evolution/ Ability to Evolve	7
Ability to take criticism	1		
Psychological robustness	1	Psychological robustness	1
Life outside of work /work life balance	1	Life outside of work /work life balance	1
Locus of control	1	Locus of control	2
Low emotional engagement	1	Low emotional engagement	1
Self-reliance	1	Self-reliance	1
Curiosity	1	Curiosity	1
Novelty/innovation	1	Novelty/innovation	1

Learning ability	1	Learning ability/ /Learn from Mistakes/from others	6
Suspension of ego	1	Suspension of ego	1
Willing to learn from others	1		
Deal with the unexpected	1	Deal with the unexpected /unknown	2
Adult ego state	1	Adult ego state	1
Perceived judgement	1	Perceived judgement	2
Knowledgeable	1	Knowledgeable	2
Independent	1	Independent	2
Agility	1	Agility /Flexibility	4
Ability to "offload"/switch off	1	Ability to "offload"/switch off/decompression	3
Willing	1	Willing	1
Perspective	1	Perspective	1
Take risks	1	Take risks	1
Proactive	1	Proactive	1
Intelligence	1	Intelligence	2
Problem solving	1	Problem solving	2
Logical thinking	1	Logical thinking	2
Lateral thinking, diffnt perspectives	1	Lateral thinking	2
Creativity	1	Creativity	1
Other people's reactions	1	Other people's reactions	1
Open minded	1	Open minded	1
Courage	1	Courage	1
Self-disclosure	1	Self-disclosure	1
Time to think/reflect	3	Time to think/reflect	3
Be prepared	2	Be prepared	2
Hormones/mood	1	Hormones/mood	1
Calmness/serenity	2	Calmness/serenity	2
Self-belief	5	Self-belief	5
OK to not know	1	OK to not know	1
OK with not being perfect	1	OK with not being perfect	1
·Growth mind-set	2	·Growth mind-set	2
·Mindful	1	·Mindful	1

·Self-efficacy	2	·Self-efficacy	2
Agency	1	Agency /Motivation	2
·Internal validation	2	·Internal validation	2
·Expertise	1	·Expertise	1
·Internal compass	1	·Internal compass /Congruence	2
·Congruence	1		
·Helpful beliefs	1	Reframe limiting beliefs / Helpful beliefs	3
·Reframe limiting beliefs	2		
·Resourceful state	1	·Resourceful state	1
·Perspective	1	·Perspective	1
·Resilience	2	·Resilience	2
·Training my brain	1	·Training my brain	1
·Self-care	1	·Self-care	1
·Self-empathy	1	·Self-empathy	1
·Competence	1	·Competence	1
·Humour	2	Humour	2
		73	145

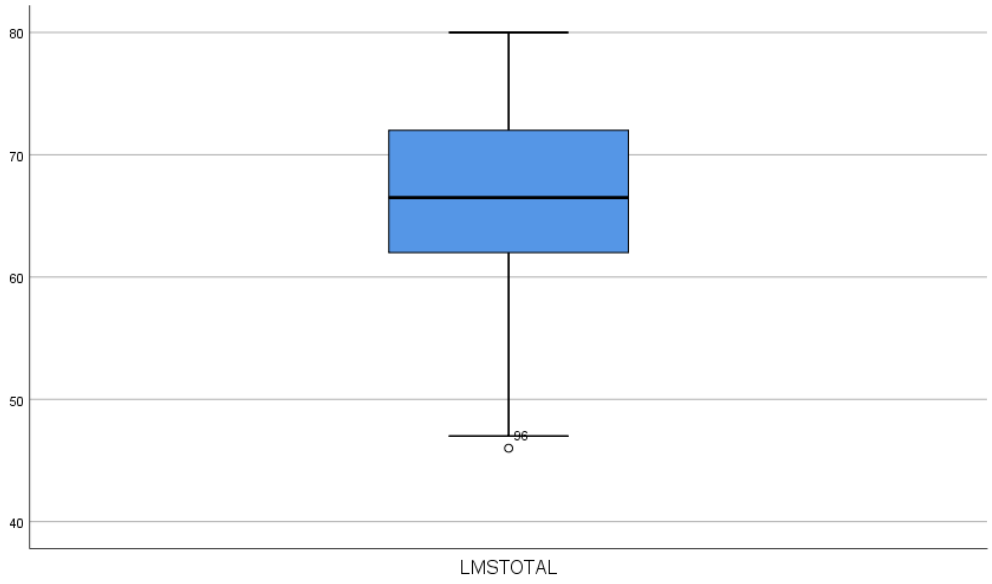
Appendix S: Student Data Descriptives and Boxplots

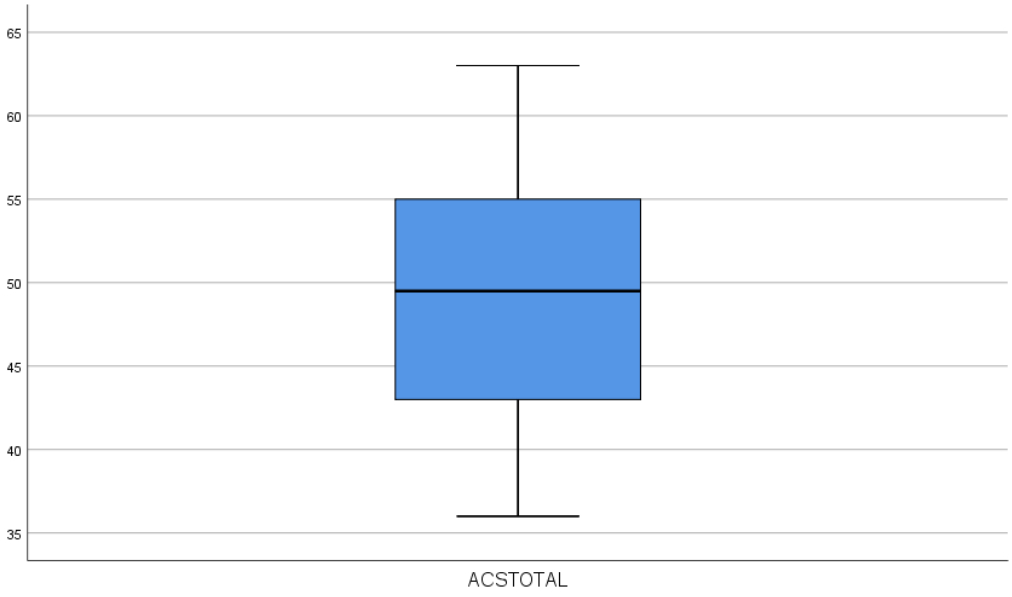
Descriptives

			Statistic	Std. Error
LMS	Mean		65.55	1.368
	95% Confidence Interval for Mean	Lower Bound	62.78	
		Upper Bound	68.32	
	5% Trimmed Mean		65.81	
	Median		66.50	
	Variance		74.869	
	Std. Deviation		8.653	
	Minimum		46	
	Maximum		80	
	Range		34	
	Interquartile Range		10	
	Skewness		-.616	.374
	Kurtosis		.111	.733
ACS	Mean		49.13	1.113
	95% Confidence Interval for Mean	Lower Bound	46.87	
		Upper Bound	51.38	
	5% Trimmed Mean		49.03	
	Median		49.50	
	Variance		49.548	
	Std. Deviation		7.039	
	Minimum		36	
	Maximum		63	
	Range		27	
	Interquartile Range		12	
	Skewness		.032	.374
	Kurtosis		-.967	.733
Psychological Safety	Mean		11.40	.324
	95% Confidence Interval for Mean	Lower Bound	10.74	
		Upper Bound	12.06	
	5% Trimmed Mean		11.47	
	Median		12.00	
	Variance		4.195	
	Std. Deviation		2.048	
	Minimum		6	
	Maximum		15	

	Range		9	
	Interquartile Range		3	
	Skewness		-.575	.374
	Kurtosis		-.158	.733
Availability	Mean		46.83	1.336
	95% Confidence Interval for Mean	Lower Bound	44.12	
		Upper Bound	49.53	
	5% Trimmed Mean		46.89	
	Median		47.00	
	Variance		71.430	
	Std. Deviation		8.452	
	Minimum		25	
	Maximum		64	
	Range		39	
	Interquartile Range		13	
	Skewness		-.186	.374
	Kurtosis		.008	.733
Resilience	Mean		21.23	.563
	95% Confidence Interval for Mean	Lower Bound	20.09	
		Upper Bound	22.36	
	5% Trimmed Mean		21.31	
	Median		21.00	
	Variance		12.692	
	Std. Deviation		3.563	
	Minimum		13	
	Maximum		28	
	Range		15	
	Interquartile Range		4	
	Skewness		-.441	.374
	Kurtosis		-.154	.733
Psychological Capital	Mean		85.18	2.036
	95% Confidence Interval for Mean	Lower Bound	81.06	
		Upper Bound	89.29	
	5% Trimmed Mean		84.86	
	Median		86.00	
	Variance		165.840	
	Std. Deviation		12.878	
	Minimum		61	
	Maximum		118	
	Range		57	
	Interquartile Range		19	

	Skewness		.204	.374
	Kurtosis		-.028	.733
HOSE	Mean		63.95	1.610
	95% Confidence Interval for Mean	Lower Bound	60.69	
		Upper Bound	67.21	
	5% Trimmed Mean		63.61	
	Median		63.50	
	Variance		103.638	
	Std. Deviation		10.180	
	Minimum		45	
	Maximum		92	
	Range		47	
	Interquartile Range		14	
	Skewness		.362	.374
	Kurtosis		.237	.733

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45
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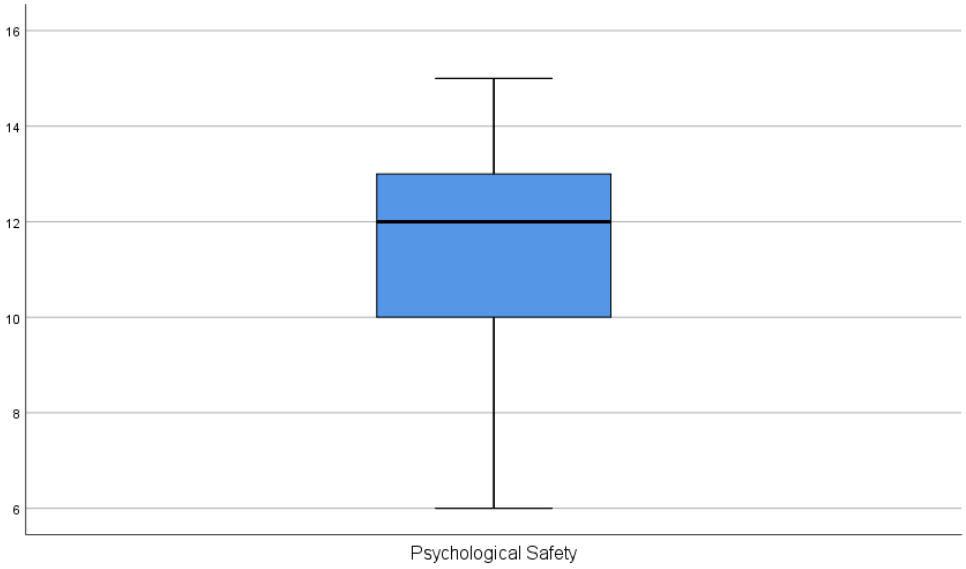
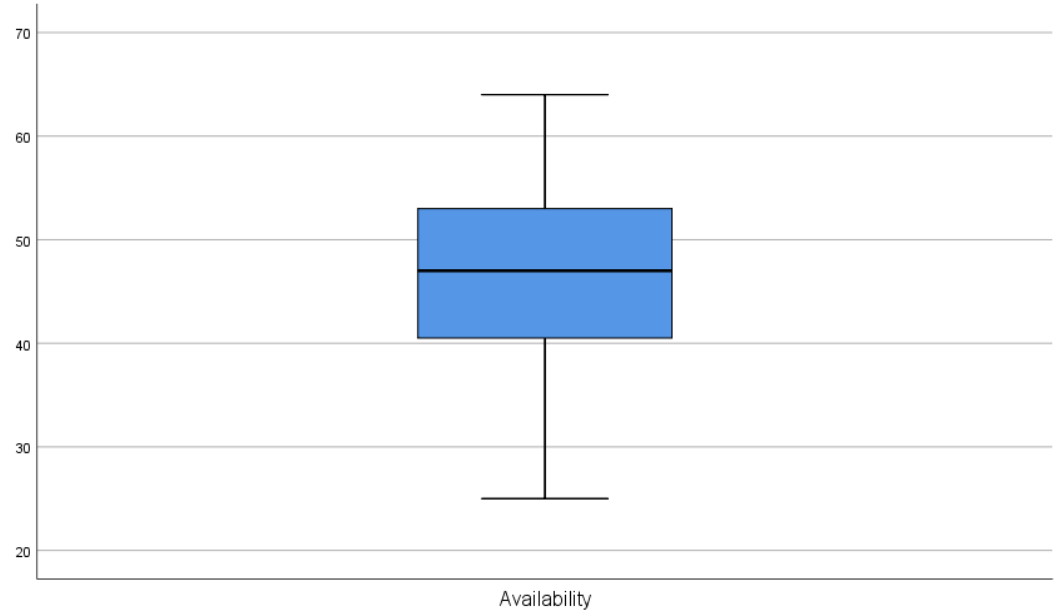
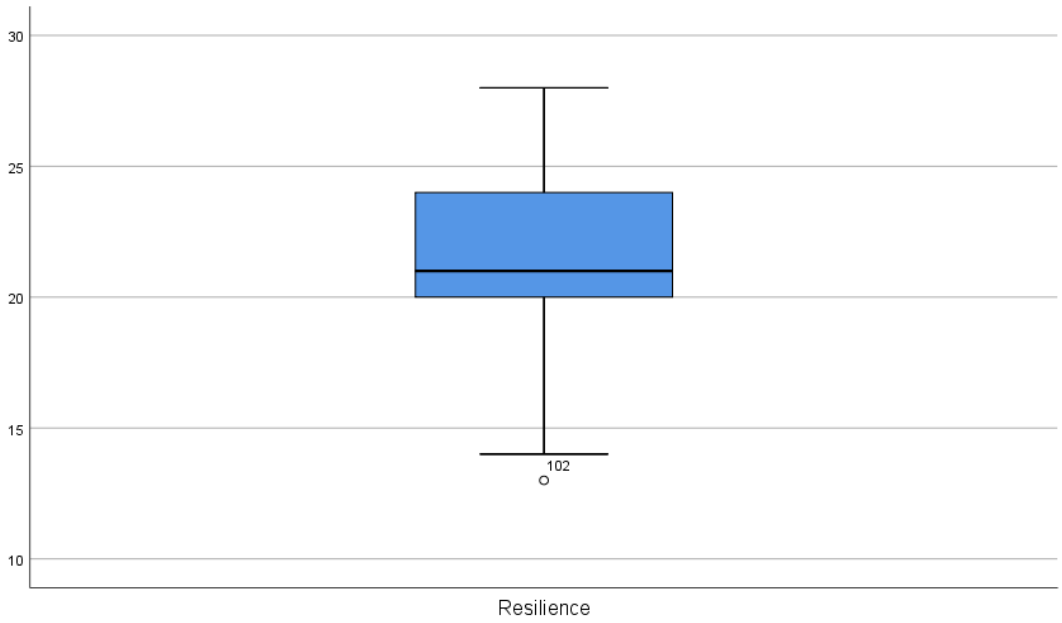
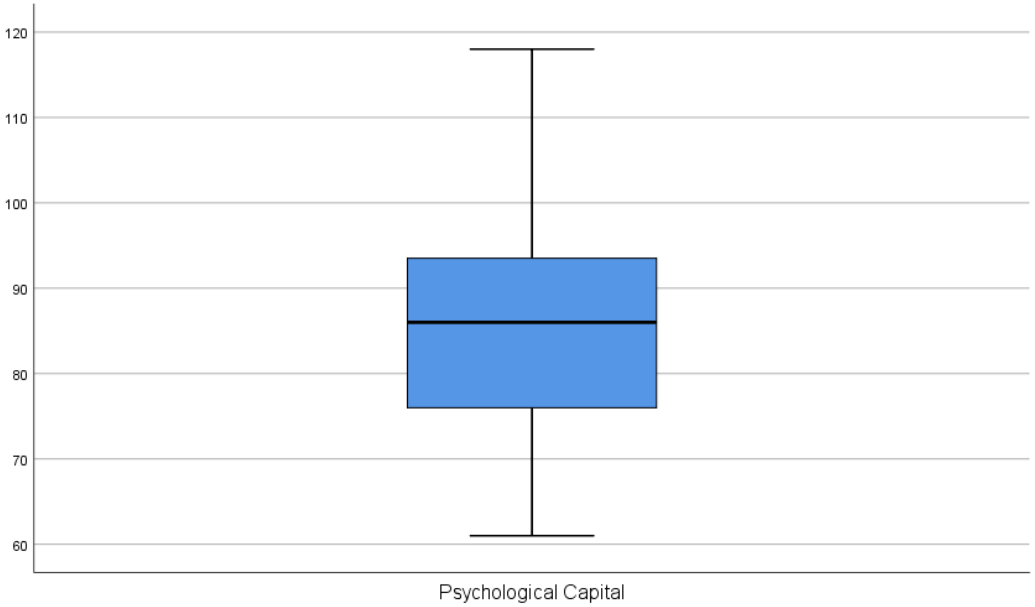
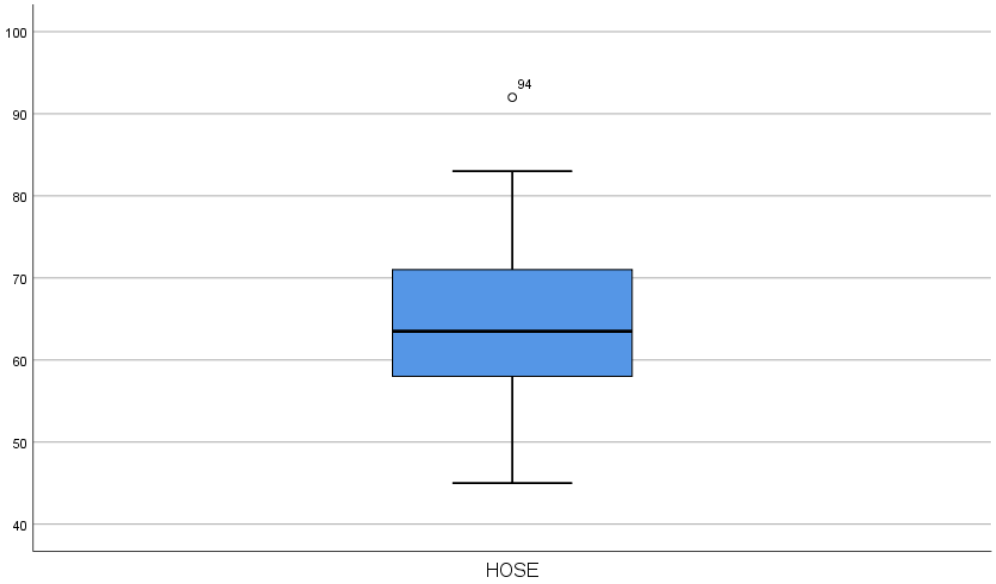
ACSTOTAL


16
14
12
10
8
6
Psychological Safety


70
60
50
40
30
20
Availability


30
25
20
15
10
102
Resilience


120
110
100
90
80
70
60
Psychological Capital


100
90
80
70
60
50
40
94
HOSE

Appendix T: Correlation Analysis of Subcomponents of Student Data Variables

		Psychological Safety	Hope	Optimism	Self-Efficacy	Resilience	Outside support	Cognitive Resources	Emotional Resources	ACS	LMS
Hope	Pearson Correlation	.242	1								
	Sig. (2-tailed)	.132									
	N	40	40								
Optimism	Pearson Correlation	.505**	.498**	1							
	Sig. (2-tailed)	.001	.001								
	N	40	40	40							
Self-Efficacy	Pearson Correlation	.309	.661**	.499**	1						
	Sig. (2-tailed)	.053	.000	.001							
	N	40	40	40	40						
Resilience	Pearson Correlation	.377*	.394*	.582**	.739**	1					
	Sig. (2-tailed)	.016	.012	.000	.000						
	N	40	40	40	40	40					
Outside Support	Pearson Correlation	.274	.428**	.154	.283	.173	1				
	Sig. (2-tailed)	.087	.006	.334	.077	.287					
	N	40	40	40	40	40	40				
Cognitive Resources	Pearson Correlation	.289	.422**	.398*	.614**	.740**	.212	1			
	Sig. (2-tailed)	.070	.007	.011	.000	.000	.188				
	N	40	40	40	40	40	40	40			
Emotional Resources	Pearson Correlation	.382*	.495**	.660**	.545**	.711**	.266	.624**	1		
	Sig. (2-tailed)	.015	.001	.000	.000	.000	.098	.000			
	N	40	40	40	40	40	40	40	40		
ACS	Pearson Correlation	.034	.393*	.176	.407**	.424**	.018	.366*	.375*	1	
	Sig. (2-tailed)	.836	.012	.278	.001	.006	.910	.020	.017		
	N	40	40	40	40	40	40	40	40	40	
LMS	Pearson Correlation	.301	.235	.303	.517**	.579**	.299	.288	.351*	.390*	1
	Sig. (2-tailed)	.059	.144	.058	.001	.000	.061	.072	.026	.013	

Bonferroni adjusted p value = .005 **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Appendix U: Outputs from Alternative Uses Experiment

Categories	Mentions	Example
1. Float	45	Fishing float
2. Ball	105	Playing catch/Juggling
3. Games	178	Play table tennis~~Play Beer pong
4. Stopper/plug	26	Plugging a hole/ You can use it as a stopper for a small bottle or flask
5. Eyes	19	You can use it as an eyeball.
6. Art/craft	48	Cut in half and glue down each half & paint for arts and crafts
7. Massage	22	Hand massage
8. Toy	35	As a toy for a small child
9. Relax-stress reliever	36	Squash it if I'm stressed
10. Animal toy	42	Cat toy
11. Jewellery/clothing	33	Make into necklace or bracelet,
12. Decoration	37	Christmas tree bauble
13. Head/face	25	Draw smiley faces on them
14. Egg cup	5	Egg cup
15. (Clowns)nose	14	Clown nose/ paint red and cut out a section to make a clown nose
16. Measurement tool/marker	25	Measuring volume/ install a parking guide/ place to mark the end of a race
17. Weapon/missile	29	Throw it at people/ ammunition for air gun, ammunition for trebuchet at work
18. Planets/globe	9	A model globe of an ice-covered planet/ explaining planets and space
19. Musical instrument	6	Drill a hole in it fill with beads to make a maraca/rattle
20. Container	31	Drill a hole and fill with salt/pepper and tape hole over to make a travel salt shaker,
21. Protection/safety	13	Add to corners of sharp objects to baby proof, cover end of knife/sharp object so you can travel with it
22. Model	4	A tree in a small model presentation
23. Mould	10	Mould shaper Cooking mould,
24. Snowmen	6	Fake snowmen
25. Lights	6	Light diffuser
26. Paperweight/weight	2	Doorstop or paperweight if you fill it with something,

27. Gift/reward	5	Give balls as presents, with a few ideas off this list
28. Keyring/keychain	3	Punch a key chain in a ball, and use it as a key chain holder
29. Magic	5	A magician can use it for magic tricks ie making it disappear
30. Egg	4	As a fake egg for a joke
31. Knob/knocker	3	As a handle on a drawer/ door knob
32. Toilet training aid	4	Teaching toddler boys to aim in the toilet :-)/aiming device for men in toilet
33. Organisation	5	I can use it to hold a paper/bill holder/display
34. Pranks/jokes	4	Use it for pranks/joke testicles
35. Construction	18	Obstacle building block/To act as supports for a plinth,
36. Sex Uses	4	Putting it up an ass or other body cavity/Sex Toy
	866	
37. Unique Responses (i.e. mentioned only once)		1. I can use it as a ping pong snow ball if I put it inside the refrigerator. 2. Camera flash softener 3. Center for monkey's fist knotwork 4. You can saw it in half and give to snails as shells. 5. An idea bubble 6. Branded business cards 7. Tint pillow 8. Strap to the back of a car at a wedding to make noise. 9. A ping pong ball can be used in frontline politics as its arguably no less articulate than Boris Johnson or Jeremy Hunt. 10. Cervicals 11. Tape them to wires on a headband, and call yourself an alien! 12. Hang on wires to scare birds away from fruit trees 13. CGI suit 14. Posture aid 15. Flower drainer in a pot 16. Coaching/counselling session 17. Pet cocktail shaker 18. Boring noise generator 19. World record of how many ping pong balls you can fit in your mouth

		20. Padding a bra 21. Placed in dogs feed bowl (stops them eating so quickly) 22. Use within baking to shape icing/chocolate 23. Apply foundation 24. Balance, plantar fasciitis/ coordination test

Appendix V: Workshop Slides

Skills To Succeed Workshop

University of Reading

Welcome

Objective:

To provide participants with a toolkit to develop the cognitive skills to increase resilience and psychological safety.

Process:

On-line Questionnaire

Workshop

4-6 weeks

On-line Questionnaire

Outcomes

By the end of the session today, you will be able to…

- Define your life values
- Articulate how they can contribute to your success
- Learn what to focus your attention on
- Manage your mind-set
- Apply reflection techniques

1: Know what you are aiming for…

"When your values are clear to you, making decisions becomes easier."

Roy Disney

Your Goals…..

Purpose

Create a specific goal….

- **S**pecific
- **M**easureable
- **A** chievable
- **R** elevant
- **T**ime bound

What's important to you?

Identifying your values….

….choose 14

….choose 7

Create your values pie…

Take a photo… these are your personal life goals!!

Your Life's Compass…

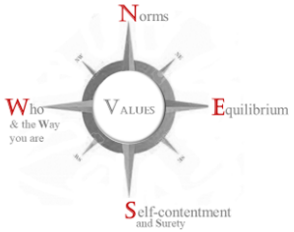
Your values are like a compass and provide us with direction and guidance in life….

Norms help us determine which way we should be going in life. They provide a benchmark as to what is right or wrong for you.

Equilibrium helps your create balance in life

Self-contentment and surety brings you happiness and contentment, confidence in your decisions

Who and the way….values represent who you are the way you choose to live your life, which feels right for you



Now…..

- Re-write your values based life goal…

2: FoCus your attention wisely…

What you think you become
What you feel you attract
What you imagine, you create.

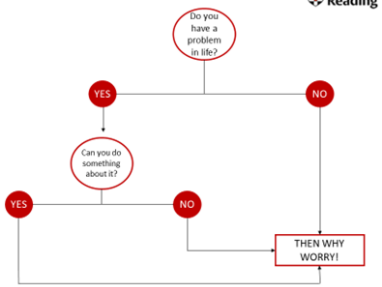
Buddha

Locus of Control

Think of all the things that will determine whether you will be on time for work in the morning……..

Wise Words

- Gaur Gopal Prabhu

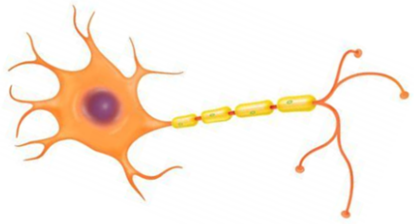


3: Believe in growth…

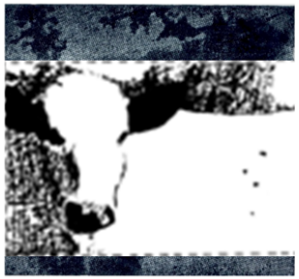
"Without continual growth and progress, such words as improvement, achievement, and success have no meaning."

Benjamin Franklin

Mindset – The Neuroscience



Neuronal Speed



Karl Deisseroth

Change your mind set…

Benefits of Growth Mindset…

1. Makes life more fun (even if you are not great at something!)
2. Helps you learn about you
3. Better relationships
4. Not feeling stupid
5. Less stress about being "perfect"
6. Higher confidence
7. Better mental wellbeing
8. Always learning

4: Manage you…

'You may not control all the events that happen o you, but you can decide not to be reduced by hem."

Maya Angelou

The Brain

The Limbic System

Our Protection Mechanism

Status

Consistency

Autonomy

Relatedness

Fairness

The Limbic System

Status

Consistency

Autonomy

Relatedness

Fairness

Mis-understanding

Conflict

Being seen as "demanding"

Being seen as selfish

FEAR

Emotional

Being taken advantage of

Making a mistake

Criticism

Upsetting or hurting someone else

Being seen as weak/vulnerable

Not being liked

Rejection

Not feminine/masculine

The Limbic System

Our [Over] Protection Mechanism

I'm the voice in your head…

The Chimp Paradox – Dr Steve Peters

Automatic Thoughts

https://www.youtube.com/watch?v=m2zRA5zCA6M

Automatic Thoughts - Exercise

- The 3 "R"s
- Record
- Rationalise
- Replace

ASK YOURSELF……

- What makes you think this?
- Where does your belief come from?
- Who are you comparing yourself to? Why?
- What is the evidence for your thought?
- What benefit does this belief provide you?

Put the brain in context…

- Not everything the brain tells you is true
- You don't have to listen or believe what the brain tells you
- You have the power over your brain, not the other way around
- Keep your brain healthy….

To learn, reflect.....

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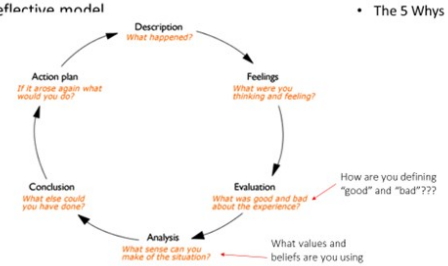
- Gibbs reflective model
- The 5 Whys



How are you defining "good" and "bad"???

What values and beliefs are you using to make sense? Why?

The healthy mind platter

University of Reading

The Healthy Mind Platter for Optimal Brain Matter™

University of Reading

"Success is liking yourself, liking what you do, and liking how you do it."
Maya Angelou

Thank You

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Appendix W: Questionnaire for Training Study

Demo

1. DEMOGRAPHIC QUESTIONS

Please enter an identifier. This can be your name, a pseudo-name, an initial or a nickname. You will need to use it again for the next survey in order to enable us to "group" all your data together: remember, all data will remain anonymous.

In which industry are you currently employed?
- Agriculture/Forestry/Fishing
- Arts/Entertainment/Recreation
- Construction/Engineering/Mining
- Education
- Financial Services
- Government, Civil Service
- Health and Social Work
- Hospitality/Events
- Information/Technology
- Marketing/Advertising/Market Research
- Pharmaceutical
- Professional (Lawyer/Architect/Accountancy/Vet)
- Real Estate
- Retail
- Transport/Storage
- Other

How long have you worked in this industry?
- less than 1 year
- 1-3 years
- 3-5 years
- 5-9 years
- more than 10 years
- Prefer not to say

In which of the following team types are you a member (select all those that apply)
- a team that has remote members (in your country)
- a team that has remote members (international)
- short term project team
- multiple teams
- none of the above

With which ethnicity do you identify?
- White
- Asian
- African
- Indian
- Arabic
- Other

- Prefer not to say

What is your highest level of education?
- Secondary School
- College
- University (degree)
- Masters
- Doctorate
- Prefer not to say

What is your age?

With which gender do you identify?
- Male
- Female
- Gender variant/non-conforming
- Not listed
- Prefer not to say

Select to what extent you agree or disagree with the following statements: LMS

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

- I like to investigate things.
- {reverse} I generate few novel ideas.
- I make many novel contributions.
- {reverse} I seldom notice what other people are up to.
- I avoid thought provoking conversations.
- I am very creative.
- I am very curious.
- I try to think of new ways of doing things.
- {reverse} I am rarely aware of changes going on around me.
- I like to be challenged intellectually.
- I find it easy to create new and effective ideas.
- {reverse} I am rarely alert to new developments happening.
- I like to figure out how things work.
- {reverse} I am not an original thinker.

Using the scale shown answer the following questions (Note the change of scale) ACS

1	2	3	4
Almost Never	Sometimes	Often	Always

- {reverse} It is hard for me to concentrate on a difficult task when there are noises around.
- {reverse} When I need to concentrate and solve a problem, I have trouble focusing my attention.

- {reverse} When I am working hard on something, I still get distracted by events around me.
- My concentration is good even if there is music in the room around me.
- When concentrating, I can focus my attention so that I become unaware of what's going on in the room around me.
- {reverse} When I am reading or studying, I am easily distracted if there are people talking in the same room.
- {reverse} When trying to focus my attention on something, I have difficulty blocking out distracting thoughts.
- {reverse} I have a hard time concentrating when I'm excited about something.
- When concentrating I ignore feelings of hunger or thirst.
- I can quickly switch from one task to another.
- {reverse} It takes me a while to get really involved in a new task.
- {reverse} It is difficult for me to co-ordinate my attention between listening and writing/typing when taking notes.
- I can become interested in a new topic very quickly when I need to.
- It is easy for me to read or write while I am also talking on the phone.
- {reverse} I have trouble carrying on two conversations at once.
- {reverse} I have a hard time coming up with new ideas quickly.
- After being interrupted or distracted I can easily shift my attention back to what I was doing before.
- When a distracting thought comes to mind, it is easy for me to shift my attention away from it.
- It is easy for me to alternate between two different tasks.
- {reverse} It is hard for me to break from one way of thinking about something and look at it from another point of view.

Using the scale shown, please answer the following questions:

1	2	3	4
Disagree	Neutral	Agree	Strongly agree

- My line manager encourages me to develop new skills.
- I am formally kept informed about how fellow colleagues think and feel about things by my line manager.
- We are encouraged by line managers to participate in important decisions.
- I receive praise for good work from those who manage me.
- Managers encourage us to speak up when they disagree with a decision.
- We are treated fairly by managers.
- The staff here do what they say they will do.
- My manager(s) help me solve work related problems.
- My managers(s) is/are committed to protecting my interests.
- I trust those who manage me.

Supervisor Support

- I go along with the norms in my group.
- I don't rock the boat with my peers.
- I do what is expected of me by my peers.

Norms

- I worry about how others perceive me at work.
- I am afraid my failings will be noticed by others.
- {reverse} I don't worry about being judged by others at work.

Self-Consciousness

- I am not afraid to be myself at work. - {reverse} I am afraid to express my opinions at work. - {reverse} There is a threatening environment in my workplace.	PS
- I am confident in my ability to handle the competing demands that work creates. - I am confident in my ability to deal with problems that come up. - I am confident in my ability to think clearly. - I am confident in my ability to display the appropriate emotions. - I am confident I can handle the physical demands needed at work.	Ability (Cognitive Resources)
- I feel mentally sharp at the end of the working day. - {reverse} I can't think straight at the end of my working day. - {reverse} I feel overwhelmed by things going on at work. - I feel emotionally healthy at the end of a working day. - {reverse} I feel like I am at the "end of my rope" emotionally. - {reverse} I feel emotionally drained from work. - {reverse} I feel tired before my the day is over. - {reverse} I feel physically used up at the end of the day.	Resources (Emotional Resources)
- I feel I have the time to invest in outside interests and activities such as sports, hobbies, family activities, religious or spiritual pursuits. - I feel I have someone to talk to if I need to.	Outside Support

Using the scale shown, please answer the following questions:

1	2	3	4
Disagree	Neutral	Agree	Strongly agree

- If I should find myself in a jam I could think of many ways to get out of it. - At the present time, I am energetically pursuing my goals. - There are lots of ways around any problem. - Right now, I see myself as being pretty successful at what I do. - I can think of many ways to reach my current goals. - At this time, I am meeting the goals that I have set for myself.	Hope
- {reverse} When I have a setback, I have trouble recovering from it & moving on. - I usually manage difficulties one way or another. - I can "be on my own" if I have to. - I usually take stressful things in my stride. - I can get through difficult times because I have experienced difficulty before. - I can handle many things at a time.	Resilience
- When things are uncertain for me, I usually expect the best. - {reverse} If something can go wrong for me, it will. - I always look on the bright side of things. - I'm optimistic about what will happen to me in the future. - {reverse} Things never work out the way I want them to. - I approach life as if "every cloud has a silver lining".	Optimism

Self-Efficacy

Please answer the following questions. ***Note the change of scale***

1	2	3	4
Not True At All	Hardly True	Moderately True	Exactly True

- I can always manage to solve difficult problems if I try hard enough.
- If someone opposes me, I can find the means and ways to get what I want.
- It is easy for me to stick to my aims and accomplish my goals.
- I believe that I could deal efficiently with unexpected events that happen.
- Thanks to my resourcefulness, I know how to handle unforeseen situations.
- I can solve most problems if I invest the necessary effort.
- I can remain calm when facing difficulties because I can rely on my coping abilities.
- When I am confronted with a problem I can usually think of a solution.
- I can usually handle whatever comes my way.

Appendix X: Longitudinal Data: GLM Repeated ANOVA

```
GLM LMSTOTT_t1 LMSTOTT_t2 ACSTOTT1 ACSTOTT2 PSTOTAL_t1 PSTOTAL_t2
RESILTOT_t1 RESILTOT_t2 HOSE_t1 HOSE_t2 PSYCAPT_t1 PSYCAPT_t2
RESOURCETOT_t1 RESOURCETOT_t2 ABILTOT_t1 ABILTOT_t22
/WSFACTOR=Time 2 Polynomial
/MEASURE=LMS ACS PS RESIL HOSE PSYCAP RESOURCE ABILITY
/METHOD=SSTYPE(3)
/EMMEANS = TABLES(time) COMPARE ADJ (BONFERRONI)
/PRINT=DESCRIPTIVE OPOWER
/CRITERIA=ALPHA(.05)
/WSDESIGN=Time.
```

General Linear Model

Within-Subjects Factors

Measure	Time	Dependent Variable
LMS	1	LMSTOTT_t1
	2	LMSTOTT_t2
ACS	1	ACSTOTT1
	2	ACSTOTT2
PS	1	PSTOTAL_t1
	2	PSTOTAL_t2
RESIL	1	RESILTOT_t1
	2	RESILTOT_t2
HOSE	1	HOSE_t1
	2	HOSE_t2
PSYCAP	1	PSYCAPT_t1
	2	PSYCAPT_t2
RESOURCE	1	RESOURCETOT_t1
	2	RESOURCETOT_t2
ABILITY	1	ABILTOT_t1
	2	ABILTOT_t22

Descriptive Statistics

	Mean	Std. Deviation	N
LMSTOTT_t1	70.89	9.597	27
LMSTOTT_t2	73.96	7.573	27
ACSTOTT1	52.56	9.300	27
ACSTOTT2	53.81	9.707	27
PSTOTAL_t1	58.81	8.162	27
PSTOTAL_t2	60.30	8.668	27
RESILTOT_t1	24.44	3.846	27
RESILTOT_t2	24.59	3.273	27
HOSE_t1	74.07	9.973	27
HOSE_t2	75.52	8.920	27
PSYCAPT_t1	98.52	12.482	27
PSYCAPT_t2	100.11	11.305	27
RESOURCETOT_t1	26.11	7.753	27
RESOURCETOT_t2	27.33	7.795	27
ABILTOT_t1	20.59	3.456	27
ABILTOT_t22	20.96	3.995	27

Multivariate Tests[a]

Effect			Value	F	Hypothesis df	Error df	Sig.	Noncent. Parameter	Observed Power[c]
Between Subjects	Intercept	Pillai's Trace	.996	727.257[b]	7.000	20.000	.000	5090.798	1.000
		Wilks' Lambda	.004	727.257[b]	7.000	20.000	.000	5090.798	1.000
		Hotelling's Trace	254.540	727.257[b]	7.000	20.000	.000	5090.798	1.000
		Roy's Largest Root	254.540	727.257[b]	7.000	20.000	.000	5090.798	1.000
Within Subjects	Time	Pillai's Trace	.372	1.695[b]	7.000	20.000	.167	11.868	.537
		Wilks' Lambda	.628	1.695[b]	7.000	20.000	.167	11.868	.537
		Hotelling's Trace	.593	1.695[b]	7.000	20.000	.167	11.868	.537
		Roy's Largest Root	.593	1.695[b]	7.000	20.000	.167	11.868	.537

a. Design: Intercept
Within Subjects Design: Time
b. Exact statistic
c. Computed using alpha = .05

Mauchly's Test of Sphericity[a]

Within Subjects Effect	Measure	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	LMS	1.000	.000	0	.	1.000	1.000	1.000
	ACS	1.000	.000	0	.	1.000	1.000	1.000

	PS	1.000	.000	0	.	1.000	1.000	1.000
	RESIL	1.000	.000	0	.	1.000	1.000	1.000
	HOSE	1.000	.000	0	.	1.000	1.000	1.000
	PSYCAP	1.000	.000	0	.	1.000	1.000	1.000
	RESOURCE	1.000	.000	0	.	1.000	1.000	1.000
	ABILITY	1.000	.000	0	.	1.000	1.000	1.000

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.
a. Design: Intercept
Within Subjects Design: Time
b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Multivariate[a,b]

Within Subjects Effect		Value	F	Hypothesis df	Error df	Sig.	Noncent. Parameter	Observed Power[d]
Time	Pillai's Trace	.372	1.695[c]	7.000	20.000	.167	11.868	.537
	Wilks' Lambda	.628	1.695[c]	7.000	20.000	.167	11.868	.537
	Hotelling's Trace	.593	1.695[c]	7.000	20.000	.167	11.868	.537
	Roy's Largest Root	.593	1.695[c]	7.000	20.000	.167	11.868	.537

a. Design: Intercept Within Subjects Design: Time
b. Tests are based on averaged variables.
c. Exact statistic
d. Computed using alpha = .05

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power[a]
Time	LMS	Sphericity Assumed	127.574	1	127.574	4.532	.043	4.532	.536
		Greenhouse-Geisser	127.574	1.000	127.574	4.532	.043	4.532	.536
		Huynh-Feldt	127.574	1.000	127.574	4.532	.043	4.532	.536
		Lower-bound	127.574	1.000	127.574	4.532	.043	4.532	.536
	ACS	Sphericity Assumed	21.407	1	21.407	1.346	.257	1.346	.201
		Greenhouse-Geisser	21.407	1.000	21.407	1.346	.257	1.346	.201
		Huynh-Feldt	21.407	1.000	21.407	1.346	.257	1.346	.201
		Lower-bound	21.407	1.000	21.407	1.346	.257	1.346	.201
	PS	Sphericity Assumed	29.630	1	29.630	1.820	.189	1.820	.255
		Greenhouse-Geisser	29.630	1.000	29.630	1.820	.189	1.820	.255
		Huynh-Feldt	29.630	1.000	29.630	1.820	.189	1.820	.255
		Lower-bound	29.630	1.000	29.630	1.820	.189	1.820	.255
	RESIL	Sphericity Assumed	.296	1	.296	.047	.830	.047	.055

		Greenhouse-Geisser	.296	1.000	.296	.047	.830	.047	.055
		Huynh-Feldt	.296	1.000	.296	.047	.830	.047	.055
		Lower-bound	.296	1.000	.296	.047	.830	.047	.055
	HOSE	Sphericity Assumed	28.167	1	28.167	2.021	.167	2.021	.278
		Greenhouse-Geisser	28.167	1.000	28.167	2.021	.167	2.021	.278
		Huynh-Feldt	28.167	1.000	28.167	2.021	.167	2.021	.278
		Lower-bound	28.167	1.000	28.167	2.021	.167	2.021	.278
	PSYCAP	Sphericity Assumed	34.241	1	34.241	1.342	.257	1.342	.200
		Greenhouse-Geisser	34.241	1.000	34.241	1.342	.257	1.342	.200
		Huynh-Feldt	34.241	1.000	34.241	1.342	.257	1.342	.200
		Lower-bound	34.241	1.000	34.241	1.342	.257	1.342	.200
	RESOUR CE	Sphericity Assumed	20.167	1	20.167	1.048	.315	1.048	.167
		Greenhouse-Geisser	20.167	1.000	20.167	1.048	.315	1.048	.167
		Huynh-Feldt	20.167	1.000	20.167	1.048	.315	1.048	.167
		Lower-bound	20.167	1.000	20.167	1.048	.315	1.048	.167
	ABILITY	Sphericity Assumed	1.852	1	1.852	.429	.518	.429	.097
		Greenhouse-Geisser	1.852	1.000	1.852	.429	.518	.429	.097
		Huynh-Feldt	1.852	1.000	1.852	.429	.518	.429	.097
		Lower-bound	1.852	1.000	1.852	.429	.518	.429	.097
Error(T ime)	LMS	Sphericity Assumed	731.926	26	28.151				
		Greenhouse-Geisser	731.926	26.000	28.151				
		Huynh-Feldt	731.926	26.000	28.151				
		Lower-bound	731.926	26.000	28.151				
	ACS	Sphericity Assumed	413.593	26	15.907				
		Greenhouse-Geisser	413.593	26.000	15.907				
		Huynh-Feldt	413.593	26.000	15.907				
		Lower-bound	413.593	26.000	15.907				
	PS	Sphericity Assumed	423.370	26	16.283				
		Greenhouse-Geisser	423.370	26.000	16.283				
		Huynh-Feldt	423.370	26.000	16.283				
		Lower-bound	423.370	26.000	16.283				
	RESIL	Sphericity Assumed	164.704	26	6.335				
		Greenhouse-Geisser	164.704	26.000	6.335				
		Huynh-Feldt	164.704	26.000	6.335				
		Lower-bound	164.704	26.000	6.335				
	HOSE	Sphericity Assumed	362.333	26	13.936				
		Greenhouse-Geisser	362.333	26.000	13.936				
		Huynh-Feldt	362.333	26.000	13.936				
		Lower-bound	362.333	26.000	13.936				
	PSYCAP	Sphericity Assumed	663.259	26	25.510				

		Greenhouse-Geisser	663.259	26.000	25.510				
		Huynh-Feldt	663.259	26.000	25.510				
		Lower-bound	663.259	26.000	25.510				
	RESOURCE	Sphericity Assumed	500.333	26	19.244				
		Greenhouse-Geisser	500.333	26.000	19.244				
		Huynh-Feldt	500.333	26.000	19.244				
		Lower-bound	500.333	26.000	19.244				
	ABILITY	Sphericity Assumed	112.148	26	4.313				
		Greenhouse-Geisser	112.148	26.000	4.313				
		Huynh-Feldt	112.148	26.000	4.313				
		Lower-bound	112.148	26.000	4.313				

a. Computed using alpha = .05

Tests of Within-Subjects Contrasts

Source	Measure	Time	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power[a]
Time	LMS	Linear	127.574	1	127.574	4.532	.043	4.532	.536
	ACS	Linear	21.407	1	21.407	1.346	.257	1.346	.201
	PS	Linear	29.630	1	29.630	1.820	.189	1.820	.255
	RESIL	Linear	.296	1	.296	.047	.830	.047	.055
	HOSE	Linear	28.167	1	28.167	2.021	.167	2.021	.278
	PSYCAP	Linear	34.241	1	34.241	1.342	.257	1.342	.200
	RESOURCE	Linear	20.167	1	20.167	1.048	.315	1.048	.167
	ABILITY	Linear	1.852	1	1.852	.429	.518	.429	.097
Error(Time)	LMS	Linear	731.926	26	28.151				
	ACS	Linear	413.593	26	15.907				
	PS	Linear	423.370	26	16.283				
	RESIL	Linear	164.704	26	6.335				
	HOSE	Linear	362.333	26	13.936				
	PSYCAP	Linear	663.259	26	25.510				
	RESOURCE	Linear	500.333	26	19.244				
	ABILITY	Linear	112.148	26	4.313				

a. Computed using alpha = .05

Tests of Between-Subjects Effects

Transformed Variable: Average

Source	Measure	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power[a]
Intercept	LMS	283257.796	1	283257.796	2335.255	.000	2335.255	1.000
	ACS	152747.852	1	152747.852	926.793	.000	926.793	1.000
	PS	191530.667	1	191530.667	1526.453	.000	1526.453	1.000
	RESIL	32462.519	1	32462.519	1693.193	.000	1693.193	1.000
	HOSE	302102.241	1	302102.241	1829.959	.000	1829.959	1.000
	PSYCAP	532625.352	1	532625.352	2063.778	.000	2063.778	1.000
	RESOURCE	38560.167	1	38560.167	379.424	.000	379.424	1.000
	ABILITY	23312.667	1	23312.667	988.254	.000	988.254	1.000
Error	LMS	3153.704	26	121.296				
	ACS	4285.148	26	164.813				
	PS	3262.333	26	125.474				
	RESIL	498.481	26	19.172				
	HOSE	4292.259	26	165.087				
	PSYCAP	6710.148	26	258.083				
	RESOURCE	2642.333	26	101.628				
	ABILITY	613.333	26	23.590				

a. Computed using alpha = .05

Estimated Marginal Means

Estimates

Measure	Time	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
LMS	1	70.889	1.847	67.092	74.685
	2	73.963	1.457	70.967	76.959
ACS	1	52.556	1.790	48.877	56.234
	2	53.815	1.868	49.975	57.655
PS	1	58.815	1.571	55.586	62.044
	2	60.296	1.668	56.867	63.725
RESIL	1	24.444	.740	22.923	25.966
	2	24.593	.630	23.298	25.887
HOSE	1	74.074	1.919	70.129	78.019
	2	75.519	1.717	71.990	79.047
PSYCAP	1	98.519	2.402	93.581	103.456
	2	100.111	2.176	95.639	104.583

RESOURCE	1	26.111	1.492	23.044	29.178
	2	27.333	1.500	24.250	30.417
ABILITY	1	20.593	.665	19.225	21.960
	2	20.963	.769	19.383	22.543

Pairwise Comparisons

Measure	(I) Time	(J) Time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
LMS	1	2	-3.074*	1.444	.043	-6.042	-.106
	2	1	3.074*	1.444	.043	.106	6.042
ACS	1	2	-1.259	1.086	.257	-3.491	.972
	2	1	1.259	1.086	.257	-.972	3.491
PS	1	2	-1.481	1.098	.189	-3.739	.776
	2	1	1.481	1.098	.189	-.776	3.739
RESIL	1	2	-.148	.685	.830	-1.556	1.260
	2	1	.148	.685	.830	-1.260	1.556
HOSE	1	2	-1.444	1.016	.167	-3.533	.644
	2	1	1.444	1.016	.167	-.644	3.533
PSYCAP	1	2	-1.593	1.375	.257	-4.418	1.233
	2	1	1.593	1.375	.257	-1.233	4.418
RESOURCE	1	2	-1.222	1.194	.315	-3.676	1.232
	2	1	1.222	1.194	.315	-1.232	3.676
ABILITY	1	2	-.370	.565	.518	-1.532	.792
	2	1	.370	.565	.518	-.792	1.532

Based on estimated marginal means
*. The mean difference is significant at the .05 level.
b. Adjustment for multiple comparisons: Bonferroni.

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Noncent. Parameter	Observed Power[b]
Pillai's trace	.372	1.695[a]	7.000	20.000	.167	11.868	.537
Wilks' lambda	.628	1.695[a]	7.000	20.000	.167	11.868	.537
Hotelling's trace	.593	1.695[a]	7.000	20.000	.167	11.868	.537
Roy's largest root	.593	1.695[a]	7.000	20.000	.167	11.868	.537

Each F tests the multivariate effect of Time. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.
a. Exact statistic
b. Computed using alpha = .05

```
GLM HOPETOT_t1 HOPETOT_t2 OPTIMTOT_t1 OPTIMTOT_t2 SETOT_t1 SETOT_t2
/WSFACTOR=Time 2 Polynomial
/MEASURE=HOPE OPTIMISM SELFEFF
/METHOD=SSTYPE(3)
/EMMEANS = TABLES(time) COMPARE ADJ (BONFERRONI)
/PRINT=DESCRIPTIVE OPOWER
/CRITERIA=ALPHA(.05)
/WSDESIGN=Time.
```

General Linear Model

Within-Subjects Factors

Measure	Time	Dependent Variable
HOPE	1	HOPETOT_t1
	2	HOPETOT_t2
OPTIMISM	1	OPTIMTOT_t1
	2	OPTIMTOT_t2
SELFEFF	1	SETOT_t1
	2	SETOT_t2

Descriptive Statistics

	Mean	Std. Deviation	N
HOPETOT_t1	22.33	4.000	27
HOPETOT_t2	22.74	3.601	27
OPTIMTOT_t1	22.67	4.472	27
OPTIMTOT_t2	23.33	4.472	27
SETOT_t1	29.07	4.224	27
SETOT_t2	29.44	3.457	27

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Noncent. Parameter	Observed Power[c]
Between Subjects	Intercept Pillai's Trace	.989	705.241[b]	3.000	24.000	.000	2115.724	1.000
	Wilks' Lambda	.011	705.241[b]	3.000	24.000	.000	2115.724	1.000
	Hotelling's Trace	88.155	705.241[b]	3.000	24.000	.000	2115.724	1.000
	Roy's Largest Root	88.155	705.241[b]	3.000	24.000	.000	2115.724	1.000

Within Subjects	Time	Pillai's Trace	.108	.970[b]	3.000	24.000	.423	2.911	.232
		Wilks' Lambda	.892	.970[b]	3.000	24.000	.423	2.911	.232
		Hotelling's Trace	.121	.970[b]	3.000	24.000	.423	2.911	.232
		Roy's Largest Root	.121	.970[b]	3.000	24.000	.423	2.911	.232

a. Design: Intercept
Within Subjects Design: Time
b. Exact statistic
c. Computed using alpha = .05

Mauchly's Test of Sphericity[a]

Within Subjects Effect	Measure	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	HOPE	1.000	.000	0	.	1.000	1.000	1.000
	OPTIMISM	1.000	.000	0	.	1.000	1.000	1.000
	SELFEFF	1.000	.000	0	.	1.000	1.000	1.000

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.
a. Design: Intercept
Within Subjects Design: Time
b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Multivariate[a,b]

Within Subjects Effect		Value	F	Hypothesis df	Error df	Sig.	Noncent. Parameter	Observed Power[d]
Time	Pillai's Trace	.108	.970[c]	3.000	24.000	.423	2.911	.232
	Wilks' Lambda	.892	.970[c]	3.000	24.000	.423	2.911	.232
	Hotelling's Trace	.121	.970[c]	3.000	24.000	.423	2.911	.232
	Roy's Largest Root	.121	.970[c]	3.000	24.000	.423	2.911	.232

a. Design: Intercept
Within Subjects Design: Time
b. Tests are based on averaged variables.
c. Exact statistic
d. Computed using alpha = .05

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power[a]
Time	HOPE	Sphericity Assumed	2.241	1	2.241	.407	.529	.407	.094
		Greenhouse-Geisser	2.241	1.000	2.241	.407	.529	.407	.094
		Huynh-Feldt	2.241	1.000	2.241	.407	.529	.407	.094
		Lower-bound	2.241	1.000	2.241	.407	.529	.407	.094
	OPTIMISM	Sphericity Assumed	6.000	1	6.000	2.000	.169	2.000	.275
		Greenhouse-Geisser	6.000	1.000	6.000	2.000	.169	2.000	.275
		Huynh-Feldt	6.000	1.000	6.000	2.000	.169	2.000	.275
		Lower-bound	6.000	1.000	6.000	2.000	.169	2.000	.275
	SELFEFF	Sphericity Assumed	1.852	1	1.852	.234	.633	.234	.075
		Greenhouse-Geisser	1.852	1.000	1.852	.234	.633	.234	.075
		Huynh-Feldt	1.852	1.000	1.852	.234	.633	.234	.075
		Lower-bound	1.852	1.000	1.852	.234	.633	.234	.075
Error(Time)	HOPE	Sphericity Assumed	143.259	26	5.510				
		Greenhouse-Geisser	143.259	26.000	5.510				
		Huynh-Feldt	143.259	26.000	5.510				
		Lower-bound	143.259	26.000	5.510				
	OPTIMISM	Sphericity Assumed	78.000	26	3.000				
		Greenhouse-Geisser	78.000	26.000	3.000				
		Huynh-Feldt	78.000	26.000	3.000				
		Lower-bound	78.000	26.000	3.000				
	SELFEFF	Sphericity Assumed	206.148	26	7.929				
		Greenhouse-Geisser	206.148	26.000	7.929				
		Huynh-Feldt	206.148	26.000	7.929				
		Lower-bound	206.148	26.000	7.929				

a. Computed using alpha = .05

Tests of Within-Subjects Contrasts

Source	Measure	Time	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power[a]
Time	HOPE	Linear	2.241	1	2.241	.407	.529	.407	.094
	OPTIMISM	Linear	6.000	1	6.000	2.000	.169	2.000	.275
	SELFEFF	Linear	1.852	1	1.852	.234	.633	.234	.075
Error(Time)	HOPE	Linear	143.259	26	5.510				
	OPTIMISM	Linear	78.000	26	3.000				
	SELFEFF	Linear	206.148	26	7.929				

a. Computed using alpha = .05

Tests of Between-Subjects Effects

Transformed Variable: Average

Source	Measure	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power[a]
Intercept	HOPE	27427.574	1	27427.574	1169.186	.000	1169.186	1.000
	OPTIMISM	28566.000	1	28566.000	772.054	.000	772.054	1.000
	SELFEFF	46229.630	1	46229.630	2114.766	.000	2114.766	1.000
Error	HOPE	609.926	26	23.459				
	OPTIMISM	962.000	26	37.000				
	SELFEFF	568.370	26	21.860				

a. Computed using alpha = .05

Estimated Marginal Means

Time

Estimates

Measure	Time	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
HOPE	1	22.333	.770	20.751	23.916
	2	22.741	.693	21.316	24.165
OPTIMISM	1	22.667	.861	20.898	24.436
	2	23.333	.861	21.564	25.102
SELFEFF	1	29.074	.813	27.403	30.745
	2	29.444	.665	28.077	30.812

Pairwise Comparisons

Measure	(I) Time	(J) Time	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a] Lower Bound	Upper Bound
HOPE	1	2	-.407	.639	.529	-1.721	.906
	2	1	.407	.639	.529	-.906	1.721
OPTIMISM	1	2	-.667	.471	.169	-1.636	.302
	2	1	.667	.471	.169	-.302	1.636
SELFEFF	1	2	-.370	.766	.633	-1.946	1.205
	2	1	.370	.766	.633	-1.205	1.946

Based on estimated marginal means
a. Adjustment for multiple comparisons: Bonferroni.

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Noncent. Parameter	Observed Power[b]
Pillai's trace	.108	.970[a]	3.000	24.000	.423	2.911	.232
Wilks' lambda	.892	.970[a]	3.000	24.000	.423	2.911	.232
Hotelling's trace	.121	.970[a]	3.000	24.000	.423	2.911	.232
Roy's largest root	.121	.970[a]	3.000	24.000	.423	2.911	.232

Each F tests the multivariate effect of Time. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.
a. Exact statistic
b. Computed using alpha = .05

Appendix Y: Output and Analysis of Qualitative Data from Training Study

Key; LoC = Locus of Control / **AC-AT** = Attentional Control- Automatic Thoughts / **LS**= Limbic System /**IKI** = Ikigai /**GRW**= Growth Mindset / **RFLT** - Reflection / **HMP** = Healthy mind Platter / **Open** = Openness

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
1	For Section A, in attempting to put things into perspective, I need to follow Prabhu's (2016) philosophy in that if I can do something about it, then I should not worry about it as I can change it. More importantly though, not worrying about things I cannot influence or change. I also need to stop creating automatic negative thoughts and instead need to grow a positive mind-set.	1	1	1					
2	Currently I catastrophize too much so need to rationalize these thoughts. According to Rock (2008, cited in Aiken/University of Stellenbosch Business School, 2018) my catastrophizing thoughts are a result of my SCARF triggers being stimulated and so they activate the limbic part of my brain. If the limbic part of the brain continues to be stimulated, then this will cause the neocortex part of the brain to shut down, which is the part of the brain used for reasoning. If this is shut down, this will result in you not being able to think rationally, which is clearly the case why I start catastrophizing my thoughts.		1	1					
3	In order to stop catastrophizing, I will look to adopt the 3R's approach (WatchWellCast, 2012) so if I am feeling stressed, I will record these events or talk about them with someone, rationalise these thoughts and then replace them with a rational thought. This should mean that the outcome will be a more limbic and rational response. Pedler's et al.,. (2013b, p136) 'catastrophic contingencies' is another model I could use. Effective use of the models will then contribute to improved resilience, happier thoughts and a more developed individual.		1	1			1		
4	The 3 models that we went through that I think have given me the biggest moment of reflection are Ikigai, (Garcia and Miralles, 2017) Growth vs Fixed Mindset and The healthy mind platter (Siegel, 2011). With these in mind and looking what I wrote back then I'm aware my life is out of balance at the moment, I'm not open minded and I haven't lived my live according to the healthy mind platter.				1	1		1	1

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
5	In addition having not heard about the Ikigai model (Garcia and Miralles, 2017) before and through this module being introduced to us, has genuinely made me realise that I have to find that balance in life again, where every comes together in harmony, but to do that I have to work out in my own head where that happy place is in my life, through honest self-reflection and really looking inwards to get to know myself better again.				1		1		
6	One other item we went through as part of the module is Fixed vs. Growth Mindset. I definitely have been very much in the Fixed Mindset since I returned to the UK in 2014, whereas before I lived my life according to the Growth Mindset. I written this down as one of my development opportunities, I want to change it.					1			
7	my appreciation of Ikigai and the fact that true growth comes from the personal desire to achieve not from my direction to them. Overall I have found this module very rewarding and it is one that will benefit both my personal and professional life as well as that of the members of my team.				1				
8	Having a Growth Mind-set has allowed me to understand that intelligence isn't something you are born with but something you can teach. To fail is simply the First Attempt in Learning. (Dr. APJ Abdul Kalam.)					1			
9	The material I have outlined has given me a greater understanding of who I am and why I respond the way I do. It has allowed me to manage my emotions better and feel more in control of my development		1	1					
10	To give an example looking at the "Healthy Mind Platter" (Rock & Siegel 2011) I struggled to find one area on the platter that I actually allowed myself to spend any time on. I have come to the conclusion throughout the last 6 months that I am a workaholic and that I need to seriously take some time out for myself and my family.							1	

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
11	I need to review my Values and think about myself and what is important to me in life, what drives me, challenge my beliefs that drives my behaviour (Material presented in Henley Business School on Personal Effectiveness Module on 21 May 2019). If I would have used Ikigai, I would have had much better set and more meaningful Purpose. Ikigai for me seems like a happy and meaningful life formula. I will need to spend time reflecting and analysing myself to understand my values, my beliefs and if I get this right, my behaviour should reflect it and should be able to set better goals and actions. I reflected and I understood that I have started to shift my thought process, which is positive. It was because of realization of areas that I need to change and work on, because I kept reflecting. I started to reflect after a negative feedback by my team, about me being negative. I was able to control myself and responded quite differently. I took in everything that has been said, I listened and then reflected as I spoke before in this essay why I was acting in this way (Peters, 2012).		1	1	1		1		
12	I can recognise instances where I have fallen into a fixed mindset, which has perhaps impaired my ability to continue to grow. it was not something I had done before out of fear that the team would have less respect for me if they knew I had development areas, and indeed what those areas were. Deeper questioning has led me to understand that this feeling stemmed from my own belief that in order to be a good leader, one must portray only strength and not weakness. This I feel originates from my early days of education where success and accomplishment were rewarded, whereas poor performance was almost shameful. I realise that whilst I carry the belief that weaknesses are a “stigma” and should not be publically acknowledged, I will never be able to develop an environment of celebrating success and failure, as in my improved PDP goal. I need to change my way of thinking, and actively compel myself to be more open so that it becomes easier over time. This will need reinforcement as I already note in my Personal Journal “I need to make sure that I continue to focus on sharing my thoughts and feelings with the team in order to encourage an environment of trust and sharing” (Personal Journey, December					1	1		1
13	I have been able to see growth in my thinking. However, no more so than within the area of mindsets. What has been interesting to discover is how I, at the time, applied the mindset thinking to situations in which I faced					1			

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
14	The theory around mindsets and in particular the Limbic system by Rock (2008) provided a detailed overview of a suggested protection mechanism the brain will process when faced with a situation that may provoke a response. In one example called out within my journal I have stated: “The SCARF framework discussed by Rock (2008) outlines how Status, Consistency, Autonomy, Relatedness and Fairness can play a role as we assess a given situation. This has been highly prominent in recent weeks given the return of my line manager from maternity leave. I have faced into certain situations where I felt threatened by her presence”. I stopped at this point and did not explore this further. Having explored and assessed my own values, it is clear my feeling of being threatened is in part due to my sense of independence and accomplishment. I felt as though my role was being taken away from me and put up a guard against that.			1			1		

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
15	Another aspect of mindsets that resonated within my personal journal was that of Automatic Thoughts (Watch Wellcast, 2012) where it was suggest that to overcome overthinking and creating disasters in your mind that the 3Rs should be used. Record, Rationalise and Replace are suggested as the best way to simplify the problems faced and almost normalise them into smaller tasks to ensure less fear. Within my journal I have touched on this "I am currently on secondment into my role and I am exceptionally nervous about having to return to my old role as it is not my desire to move back. That said, the future of my current role is also uncertain given budget stretches". This short exert is a critical insight into how I am building problems within my head and not thinking clearly around my future career paths with clarity and confidence. This again links into findings by Bandura and Locke (2003) around a loss of engagement due to doubt. The whole argument around mindsets links into the wider research by Rock et al., (2011) around the Healthy Mind Platter and how the seven boxes need aligned to ensure optimal wellbeing. Indeed Gray (2015) has even suggested that the Healthy Mind Platter may be beneficial rolled out across whole organisations. As discussed earlier, my work/life balance is suffering, as also touched on within my journal: "My working time has increased markedly since I started covering for my manager who left for maternity in 2018. I feel a commitment to my managers to ensure I am on top of everything". It may be beneficial for me to start recording my feelings via the Gibbs (1998) reflective model. Indeed, Gibbs even suggests that additional competence can occur through using the reflective mode. The Gibbs (1998) study is reinforced by Sherwood et al., (2018) who comments that reflective models may even add confidence and help colleagues 'find meaning' to their work. Grey (2015) comments "leaders must learn to value downtime as essential" and goes on to comment that companies should actively encourage downtime to ensure colleagues have coping mechanisms. A similar study of workplace stress was completed at EY (Wachman, 2011) and discovered downtime was essential as part of the Healthy Mind Platter (Rock et al., 2012). This would strengthen the argument that to succeed, my work:life balance needs addressed and it also needs the full support of my lune manager.		1				1	1	

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
16	One assessment that I used for the initial three goals was based around the Japanese concept of "Ikigai", which is explained by Miralles & Garcia's (2017) book, also called "Ikigai". The process involves considering what you love, what the world needs, what you can be paid for and what you're good at. I found this to be a useful method which helped to identify that a prior career goal would be likely to impact other areas important to me.				1				
17	I would have loved for the Values topic to have been moved further forwards in the curriculum. I believe this learning would be invaluable and powerful if it were to be discussed alongside emotional intelligence. I have learnt so much about myself. Understanding the way I think, the way I feel, why I feel that way, what I want and why I want it has been somewhat of an epiphany to me.				1		1		
18	Ikigai is a Japanese concept meaning "a reason for being" and is something I found useful when thinking about improving my PDP. When assessing what I love alongside what I am good at versus what the world needs and what I could be paid for, it became easier to identify some key areas I want to move towards within my PDP. "To discover your Ikigai, you must first find what you're more passionate about. Then, you find the medium through which you can express that passion." (Myers, 2018) I find this way of describing it very thought-provoking and really related to it. My purpose in life has always been very clear to me – to help people. It is something that comes naturally to me. Without consciously doing so, I naturally take the position of leader, of using my skills of persuasion, negotiation and communication. This feeds my passion and desire to help others and to make things better for others.				1				
19	that I have found useful in thinking about is you cannot always change a situation but you can change how you react to it. There are many things out of our control and what is the point of upsetting myself when there is nothing I can do about it. Sam's reference to being stuck in traffic at the last session was a great example.	1	1						

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
20	I competed my own Ikigai. I found that by doing this that I realised that I was good at my job, and I get paid for it, but I am not passionate about it, and I certainly do not love it. My job provides for my family who I do love. The only thing I really I do love about my job is the feeling of being valued by my manager, who is often full of praise towards me (although I often dismiss it and do not see in me what he does). I have had to ask myself; Did I/Do I have Ikigai if I was doing something that I am good at and paid for, even though I do not love it. What I get out of it provides for, and helps pay for some of the things that I do love? When all was considered, my answer was no, I am not quite at my Ikigai. I felt I was somewhere between "satisfaction but feeling of uselessness" and "comfortable, but feeling of emptiness" At this point in my life, I had never even considered mission or vocation.				1				
21	The next area of interest for me was the Ikigai model which broadly means "purpose" or "reason for being". This also intrigued me as a tool for self-reflection. I am a big believer in balance. Whilst the path of life can often be bumpy, if you are lucky enough to really care about the profession you find yourself in or indeed feel that you are making a difference to the things that are important to you, then you will naturally perform to higher standard. I believe the Ikigai model helps cut through some of this uncertainty and provide an anchor point to really hone in on effective reflection, and probably more importantly allows for the start of a possible new direction in which both personal and professional fulfilment which can be applied to both my trajectory and that of others.				1		1		
22	In addition I have spent more time working on Ikigai. "Ikigai is about finding joy, fulfilment, and balance in the daily routine of life" (Forbes, Feb 23, 2018).I truly enjoy my job but I cannot say it's my passion, I still do not know what my passion is however I do know I am truly passionate about helping others and I have strong interest in the environment. To this extent perhaps my adventure in self-employment should centre around helping others and the environment so perhaps my business will be one of training and consulting on helping business be more aware of environmental impact and how they can improve.				1				
23	I focused on the outputs of the Growth Mindset quix [sic] - it was an interesting outcome for me. I actually scored quite low and only just scraped through into the Growth mindset with some fixed ideas. This was a revelation to me.					1			

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
24	Self awareness of my emotions has been paramount in learning achieved. An understanding of our brain has various areas, particularly the limbic system with specifically the amigdala [sic] holds all the emotional memory and hold out flight or fight mode. Using the RRR concept has changed how I now deal with these overcoming thoughts I face and help me rationalise.		**1**	**1**			**1**		
25	This journey of learning has been life changing: first determining and knowing what my values are and where this stems from and how this has come through to my beliefs and behaviours, then having the tools to further self-analysis. This has given me the confidence to not be afraid to ask for help.				**1**		**1**		
26	I have been able to see the growth in my thinking; no more so that within the area of mind-sets. What has been interesting to discover is how I, at the time, applied the mind set thinking to situations in which I faced. However in hindsight I would tackle the situations differently.					**1**			
27	. I now understand what my life career and {name} do actually fit all 4 aspects of my 'Ikigai'. This was a profound moment for me when I saw the frameworks and thought actually 'I am right to feel driven and care about my career' for that is my vocation. In my reflective journal I wrote for this '**light bulb'** and **'it's ok'**.				**1**				
28	Prior to completing the growth mind set questionnaire I would have said I was someone who was very open to change and actually embraces it – a live work example being the introduction of robotics into my team this year. When I completed the questionnaire I scored the lowest on my table of four peers in growth, it wasn't a particularly low score but I was on the cusp and this surprised me, I also felt surprised I was the lowest of all five colleagues sat around the table. I have given this some thought over the last few months and re-visited my questionnaire to analyse where my mind set is perhaps more closed. There was specifically a few areas that I did mark myself lower and now recognise they areas need to continue to be a focus so I can to grow and be the best leader possible. I found the exercise so thought provoking that I reached out to the tutor at Henley to gain a copy so I could complete the exercise with my six team managers. I want that to go on the same journey that I did and hope they find the exercise thought provoking too with a view if perhaps they are of a fixed					**1**			

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
	mind set this personal exercise will open their eyes to that so with the support of me we can try to develop them into a new evolving growth mind set.								
29	A theory that resonated with me was the Gibbs (Davies 2012) reflective theory, I like that this theory gives structure to learning from feelings and experiences. As mentioned previously reflecting is something that neither I nor wider team do well; we always seem to jump to the next initiative or thing on our task list. In my reflective journal when discussing Gibbs I wrote down '**Know I should do this, but do I?'** At the time of writing this in my reflective journal I already knew the answer – I don't take time to reflect and I don't follow the structure of the Gibbs theory. I like Gibb's theory as I appreciate you must reflective in order to do something better the next time and to be constantly learning. In my day job I do want to be the best I possibly can be and now recognise I need to proactively reflective whether that be post a challenging conversation with a colleague or on something bigger such as a project. Regardless of the situation to truly be the best I can be I need to ensure I introduce reflecting into my career and chose to follow the gibbs reflective theory as it is my favourite and the one which I have found to resonate the most with me personally.						**1**		
30	Ikigai & understanding my values: Ikigai as outlined was a real eye opener for me, previously objectives were based around development – often what you didn't enjoy doing. With my purpose in mind, I can take forward the concept into how I progress my career, how I interact with others and my team. Understanding my values will also be incorporated into my day to day reflection				**1**		**1**		
31	Self-Management – If you are controlled by words then those who speak those words will have a degree of control over me. The three circles model by Covey was something I had heard of yet to my regret not explored . For me it rightly sets parts of my life into or in some cases straddling the lines between Concern, Influence and Control. Staring to map my work and outside life into this model has demonstrated to me that surprising those in the direct control of me are fewer than those on the outside of concern where I have little control. That said a positive mindset and good focused attitude are within my control and can quickly have a disproportionate positive effect on say what people think of me, how I gain their trust and collaborate with them.		**1**						

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
32	I find it really interesting and also satisfying to know that a module that I honestly thought would have little benefit to me in my current role, has actually proven my gut instinct completely wrong and helped implement a huge change to my operation, which I'm sure will be the first of many going forward. This has made me make sure that I keep an open mind and don't make any assumptions as it did seem unlikely this module in particular wouldn't fit into my role, yet it has helped massively!					**1**	**1**		**1**
33	the whole reflection process which was required as part of this essay, has made me truly consider and accept the person and leader I am today and actions I need to undertake to allow me to achieve the leader I strive to be.						**1**		
34	the Gibbs Reflective model (Gibbs, 1989) was brought to mind this week when I had an interaction with my line manager's manager, the area director who was visiting my branch for the first time … At the time I was really frustrated with the feedback, and in fact quite angry. But as I work through the steps in the Gibbs Reflective model as quoted above, I found that I could make sense of his approach to the conversation and in fact if I were to have noticed this earlier and done something differently, the conversation would never have needed to happen. Upon this reflection I have now put in place an action plan which, if successful, should take me all the way through the model with what I hope will be a good result. Something else that really inspired and interested me as part of my learning was Evolution Theory of the Three Brains. This was formulated by neuroscientist Paul D. MacLean (The Triune Brain in evolution, 1990) in the 1960's. His theory was the that brain has 3 distinctive structures. I think for me what I found fascinating about the above is how all of this is interlinked and how you can train yourself to be more logical by trying to control your Limbic System (or inner chimp as it is sometimes called – can be like the naughty part of the brain). I will definitely consider this going forward and will reflect on this as part of my learning. I feel this has already opened my eyes and showed me that it is not just key skills from information that can help you move forward as a manager, but also training your brain			**1**			**1**		

	Comment	LoC	AC/AT	LS	IKI	GRW	RFLT	HMP	OPEN
	to react to different situations / scenarios or learning skills as coping mechanisms can also enhance your development.								
35	My values will change this year and become more family orientated as others will be relying on me. Figuring this out has helped me understand what is truly important to me, how I see success and what items should therefore be on my development plan.				**1**				
36	There are several learnings I have taken and would adopt into the workplace. My first would be around understanding how you assess yourself to find out whats important to you. To do this, you need access to the right tools and techniques and time away from the day job to adequately think about whats important. You need the right time and environment to think through why you are here and what you want to achieve. These two questions can underpin your whole development journey. The second task I would implement is finding your value. This was a really important piece of learning for me and I think it would help colleagues focus in on what their current values are and which value they can use to help shape their PDP. The third assessment style learning I would introduce is around Ikigai. Do people really know what their purpose is? Do they know what skills and capabilities they have? How can I help them with this? The fourth learning is reflection. I have learnt that I have not been taking enough time to reflect and I haven't been doing it properly. I would encourage my peers and colleagues to do this at least monthly and I would facilitate this implementation by sharing my own story of reflection and how it helped me re-write my PDP and re-focus my life goals.				**1**		**1**		
	TOTAL	**2**	**9**	**8**	**15**	**9**	**16**	**3**	**3**